QMS® 1725E Print System Reference

1800387-001B

Trademarks

The following are trademarks or registered trademarks of their respective owners. Other product names mentioned in this manual may also be trademarks or registered trademarks of their respective owners. Registered trademarks are registered in the United States Patent and Trademark Office; some trademarks may also be registered in other countries. QMS and the QMS logo are registered trademarks of QMS, Inc., and Crown, the Crown seal, and PS Executive Series are trademarks of QMS, Inc. PostScript is a trademark of Adobe Systems Incorporated for a page description language and may be registered in certain jurisdictions. Throughout this manual, “PostScript Level 2” is used to refer to a set of capabilities defined by Adobe Systems for its PostScript Level 2 page description language. These capabilities, among others, are implemented in this product through a QMS-developed emulation that is compatible with Adobe's PostScript Level 2 language. Adobe/Adobe Systems Incorporated. 3Com, 3+Open/3Com Corporation. Aldus, Aldus PageMaker, Aldus FreeHand/Aldus Corporation. Apple, AppleTalk, EtherTalk, LaserWriter, LocalTalk, Macintosh, TrueType/ Apple Computer, Inc. VINES/Banyan. CompuServe /H & R Block. DEC, DECnet, VMS/ Digital Equipment Corporation. PhoneNET/Farallon Computing, Inc. Hewlett-Packard, HP, PCL, HP-GL, LaserJet/Hewlett-Packard Co. IBM PC, IBM 3270/5250A, Token-Ring/ International Business Machines Corporation. Intel/Intel Corporation. Microsoft, MS-DOS/Microsoft Corporation. Novell and NetWare/Novell, Inc. QuarkXPress/Quark, Inc. TOPS/Sun Microsystems, Inc. UNIX/UNIX Systems Laboratories.

Proprietary Statement

The digitally encoded software included with your QMS 1725E Print System is Copyrighted © 1995 by QMS, Inc. All Rights Reserved. This software may not be reproduced, modified, displayed, transferred, or copied in any form or in any manner or on any media, in whole or in part, without the express written permission of QMS, Inc.

Copyright Notice

This manual is Copyrighted © 1995 by QMS, Inc., One Magnum Pass, Mobile, AL 36618. All Rights Reserved. This manual may not be copied in whole or in part, nor transferred to any other media or language, without the express written permission of QMS, Inc.

Contents

1 Introduction

Introduction **1-2**

About This Manual **1-2**

Typographic Conventions 1-4

2 Print Media

Introduction **2-2**

Media Sizes and Imageable Areas **2-2**

Setting Page Margins 2-3

Media Types and Weights **2-3**

Envelopes 2-4

Labels 2-4

Paper 2-4

Transparencies 2-5

Media Storage 2-5

3 Professional Printing

Introduction 3-2

About Typefaces and Fonts 3-2

More Typography Terms 3-3

Typeface Classification 3-6

Resident Fonts 3-7

Resident PostScript Fonts 3-7
Resident HP PCL Fonts 3-9
Resident HP-GL Symbol Sets 3-9

Optional Fonts 3-10

PostScript Typeface Sampler 3-11

Page Design 3-13

References 3-13

4 Printer Configuration

Introduction 4-2

Methods of Configuration 4-2

Using an Application 4-2
Using PS Executive Series Utilities 4-3
Using Printer Commands 4-3
Using the Control Panel 4-3
Using a Remote Console 4-4

Configuration Menu 4-4

Accessing the Configuration Menu 4-5
Selecting Configuration Menu Options 4-6
Changing Character Information 4-7
Saving Configuration Changes 4-10

Canceling Configuration Changes 4-10
Setting the Message Window Language 4-11
Restoring the Factory Default Configuration 4-12

Operator Control Menu 4-12
Copies 4-12
Collation 4-13
Orientation 4-13
Inputbin 4-13
Outputbin 4-14
Chain Inputbins 4-14
Manual Feed Size 4-14
Def. Duplex 4-15
Tumble Duplex 4-15

Administration Menu 4-15

Communications 4-16
Setting Timeouts 4-16
Setting Serial Interface Parameters 4-17
Setting Parallel Interface Parameters 4-23
Emulation 4-24
Setting Network 2 Options 4-27

Emulations 4-28
Setting an ESP Default Emulation 4-28
Setting PostScript Parameters 4-29
Setting HP PCL5 Parameters 4-29
Setting HP-GL Parameters 4-36
Setting Lineprinter Parameters 4-39

Special Pages 4-43
Working with Status Pages 4-43
Working with Trailer Pages 4-45
Enabling/Disabling Trailer Pages 4-45

Printer Start-Up Options 4-46
Enabling/Disabling the Start-Up Page 4-46
Enabling/Disabling the SYS\START File 4-46
Loading the PostScript Error Handler 4-47

Memory 4-47
Configuring Spooling 4-47
PostScript Heap 4-48
PostScript Fonts 4-48

Emulation 4-49
Emulation (Temporary) 4-49
Display List 4-50
Disk Cache 4-50
Frame Buffer 4-51
Printer Memory 4-52
Enable Disk Swap 4-53

Printer Engine Features 4-54
Adjusting the Image Alignment 4-54
Setting Default Paper 4-55
Setting Inputbin x Name 4-55
Setting Outputbin x Name 4-56
Setting Default Resolution 4-56
Setting Gamma Correction 4-56
Enabling/Disabling the Warning Buzzer 4-57
Specifying Page Recovery Action 4-57
Setting Toner Out Action 4-57
Setting Energy Conservation 4-57
Setting Manual Feed Timeout 4-58
Setting the Letterhead Option 4-58

Miscellaneous 4-59
Restoring the Factory Default Configuration 4-59
Reboot System 4-59
New Flash Image 4-59
Setting the Message Window Language 4-60

Hard Disks 4-60
Installing an Optional Font 4-61
Removing an Optional Font 4-61
Formatting a Hard Disk 4-61
Collation 4-61
Spool Overflow 4-61

Installation 4-62
Operator Password 4-62
Use Operator Password 4-62
Admin Password 4-62
Use Admin Password 4-63
Using Passwords 4-63

Configuring Optional Features 4-63

5 Additional Technical Information

Introduction **5-2**

The Emulation Sensing Processor (ESP) **5-2**

Simultaneous Interface Operations (SIO) **5-3**

Communication Modes **5-3**

About Gamma Correction **5-3**
- Terms 5-4
- Gamma Correction Concept 5-5

Memory **5-7**
- QMS Memory Management 5-7
- Memory Terms 5-8
- Evaluation of Your Printing Environment 5-10
- Memory Clients 5-12
- Hard Disk Management 5-18

End Job Mode **5-19**
- Common Reasons to Use End Job Mode 5-19
- Using the EOD Commands 5-20
- Setting the End Job Mode for the Serial and Parallel Protocols 5-21
- Setting the End Job Mode via the Control Panel 5-22
- Adding an EOD Command to Your File 5-23
- Creating a Network Job Separator 5-24

Parallel Interface Modes **5-25**
- Byte Mode 5-25
- Compatibility Mode 5-26
- ECP (Enhanced Compatibility Port) Mode 5-26
- EPP (Enhanced Parallel Port) Mode 5-26
- Nibble Mode 5-26

PS Protocol Option **5-26**
- Options 5-28
- Advantages 5-29
- Implementation 5-29

HP-GL Color Encoding **5-29**

6 Printer Options

Introduction 6-2

Additional Paper Cassettes 6-3

The Envelope Feeder 6-3
Selecting Envelopes 6-3
Installing the Envelope Feeder 6-3

Duplexer Assembly 6-7
Installing the Duplexer Assembly 6-7

Font and Emulation Cards 6-11

Security Card 6-13

Removing and Re-installing the Tray Assembly 6-15
Removing the Tray Assembly 6-15
Re-installing the Tray Assembly 6-19

Memory Modules (SIMMs) 6-20
Installing a SIMM 6-20
Removing a SIMM 6-23

Intellifont SIMM 6-23
Installing the Intellifont SIMM 6-24
Increasing the Disk Cache Size 6-26
Verifying the Installation 6-26
Font List 6-26
Accessing the Fonts 6-28

Installing Optional Interfaces 6-29
Installing an Optional Interface Card and Daughterboard 6-29

Using a Network Interface 6-34

Using a LocalTalk Interface 6-34
Hardware 6-35
Software 6-36
Testing Macintosh Communication 6-40

Internal Hard Disk 6-43
External Hard Disk Drive 6-46

Storage Options **6-48**
The Disk Operations Menu 6-48
Formatting a Hard Disk 6-48

Fonts on the Hard Disk **6-50**
Installing an Optional Font 6-50
Removing an Optional Font 6-51
Downloading an Emulation 6-52

Emulations on the Hard Disk **6-53**
Installing an Optional Emulation 6-54
Removing a Printer Emulation 6-54

Kanji Fonts **6-55**
Hardware Requirements 6-56
Installing the Kanji Disk 6-56
Configuring the Printer 6-59

Updating System Software **6-62**
Requirements 6-62
Procedure—Macintosh Users 6-63
Procedure—PC Users—Parallel and Serial 6-65

A QMS Customer Support

Sources of Support **A-2**
Your QMS Vendor A-2
Your Application Vendor A-2
Q-FAX A-2
The QMS Corporate Bulletin Board System A-3
CompuServe A-3
Internet A-3
QMS Customer Technical Assurance (CTA) A-4
QMS National Service A-5

QMS World-wide Offices **A-6**

B Technical Specifications

Print Engine Specifications **B-2**

Controller Specifications **B-3**

Electrical Requirements **B-4**

Environmental Requirements **B-4**

Physical Characteristics **B-4**

Print Media **B-5**
Print Media Sizes B-5
Envelopes B-6

Optional Hardware **B-6**
Paper Handling B-6
Hard Disks B-6

Consumable Supplies **B-7**

Cable Pinouts **B-7**
Centronics/IEEE 1284 Parallel B-7
Serial B-9
IBM PC/XT, PC/AT, and Compatible Computers B-10
Ethernet B-11
LocalTalk (Optional Interface) B-12
Macintosh to Serial B-12

Warranty Considerations **B-13**
Consumables and Your Warranty B-13
Electrostatic Discharge and Your Warranty B-13

C Document Option Commands

Introduction **C-2**

Supported DOCs **C-2**
Header/Trailer Page Commands C-2
HP-GL Emulation Commands C-2
HP PCL 5 Emulation Commands C-3
Lineprinter Emulation Commands C-3
PostScript Emulation Commands C-4
Printer Commands C-4

Updated DOCs C-4
PCL 5 Emulation Terminology C-4
Updated PCL 5 DOCs C-7

CCITT Commands C-20
Accessing CCITT Emulation C-20
Command Syntax C-20
ImageSize C-21
ImagePosition C-21
Rotation C-22
LineEnd C-22
BlockEnd C-23
EBAMode C-23
BitReverse C-23
InvertImage C-24
Compression C-24
DPI C-24
ImageData C-25
PageEnd C-25
JobEnd C-26

D Notices

Manual Notice D-2

Laser Safety D-2

FCC Compliance D-2

International Notices D-4
Canadian Users D-4
Vfg 1046/1984 Conformity Statement D-4
Bescheinigung des Herstellers/Importeurs D-4
Declaration of Manufacturer/Importer D-4
Electronics Emissions D-5

Colophon D-5

E Configuration Menu

Configuration Menu E-2

Glossary

Index

❖

1

Introduction

In This Chapter . . .

- About this manual
- Typographic conventions

Introduction

This manual provides detailed instructions and technical information for your QMS 1725E Print System. Use this guide in conjunction with your other printer documentation.

This chapter gives you a brief overview of this manual.

About This Manual

The information in this manual is divided into the following sections:

- **Chapter 1—Introduction**

  Provides an overview of the manual.

- **Chapter 2—Print Media**

  Lists print media sizes, margins, and imageable areas and provides media storage information.

- **Chapter 3—Professional Printing**

  Discusses typefaces and fonts, typographic terms, displays the printer's typefaces, and provides some page design tips.

- **Chapter 4—Printer Configuration**

  Explains the methods of configuring the printer, demonstrates how to use printer control panel, and provides a detailed discussion of the configuration menu.

- **Chapter 5—Additional Technical Information**

  Defines ESP and SIO, communication modes, gamma correction and memory. Discusses end job mode, IEEE 1284 bidirectional parallel interface modes, PS Protocol and HP-GL color encoding.

- **Chapter 6—Printer Options**

  Describes how to install and use the envelope feeder; font, emulation, and security cards; the duplexer assembly; memory upgrades (SIMMs); an Intellifont SIMM; LocalTalk and network interfaces; internal and external hard disks, an external Kanji font disk, and system software updates.

- **Appendix A—QMS Customer Support**

  Provides world-wide product sales and support telephone numbers and describes how to communicate with QMS through the QMS Bulletin Board, CompuServe, the Internet, and Q-FAX.

- **Appendix B—Technical Specifications**

  Provides technical specifications for the printer and lists available supplies and replacement parts.

- **Appendix C—Document Option Commands**

  Lists printer-supported Document Option Commands (DOCs) and provides updated PCL5 DOCs.

- **Appendix D—Notices**

  Lists manual and legal notices.

- **Appendix E—Configuration Menu**

  Provides a view of the printer's configuration menu.

- **Glossary**

  Defines commonly used terms.

Typographic Conventions

The following typographic conventions are used throughout this manual:

`Mixed-Case Courier`	Text you type, and messages and information displayed on the screen
`Mixed-Case Italic Courier`	Variable text you type; replace the italicized word(s) with information specific to your printer or computer
UPPERCASE COURIER	Information displayed in the printer message window
lowercase bold	PostScript operators and DOS commands
lowercase italic	Variable information in text and PostScript variables
UPPERCASE	File and utility names
↵	Press the Enter key (PC) or Return key (Macintosh)
^	Press and hold down the Ctrl key (PC)

» Note: Notes contain tips, extra information, or important information that deserves emphasis or reiteration.

Caution: Cautions present information that you need to know to avoid equipment damage, process failure, or extreme annoyance.

WARNING! Warnings indicate the possibility of personal injury if a specific procedure is not performed exactly as described in the manual.

ACHTUNG! Bitte halten Sie sich exakt an die im Handbuch beschriebene Vorgehensweise, da sonst Verletzungsgefahr bestehen könnte.

❖

2

Print Media

In This Chapter . . .

- Media sizes, margins, and imageable areas
- Media types and weights
- Media storage

Introduction

This chapter lists the media sizes and imageable areas supported by the QMS 1725E Print System, and then provides information on selecting and storing media.

Media Sizes and Imageable Areas

Your printer supports media of different sizes. Each media size has a certain imageable area, the maximum area on which the printer can print. This area is subject to both hardware limits (the physical media size and the margins required by the printer) and software constraints (the amount of memory available for the full-page frame buffer).

» Note: The media size must match the cassette size. Since the cassette sends a size signal to the printer controller, using the wrong size media will cause your image to be positioned incorrectly on the page or clipped. You may purchase additional cassettes from your QMS vendor.

The following table lists the size, imageable area, and feed edge (the edge of the media drawn into the printer first) of all supported media:

Media	Media Size		Imageable Area	
	Inches	Millimeters	Inches	Millimeters
A4	8.27x11.69	210.06x296.93	7.92x11.38	201.38x289.22
Executive	7.25x10.50	184.15x266.70	6.94x10.16	176.44x258.06
Legal Letter	8.50x14.00 8.50x11.00	215.90x355.60 215.90x279.40	8.18x13.66 8.16x10.69	207.94x346.96 207.26x271.61

Working Within the Imageable Area

The imageable areas for print media on your QMS 1725E Print System are not centered vertically on their respective pages and may vary $^{1}/_{16}$" (1.6 mm). You can align the image in several different ways:

- Adjust the margins or page size through your application.
- Use the printer's control panel (Administration/Engine/Image Alignment menu).
- Use the PS Executive Series Utilities.
- Use the PostScript **translate** and **scale** operators to reduce image size and change its placement on the page. The *QMS Crown Technical Reference Manual* contains information on PostScript operators.

Setting Page Margins

Margins are set through your application. Some applications allow you to set custom page sizes and margins while others have only standard page sizes and margins from which to choose. If you choose a standard format, you may lose part of your image (due to imageable area constraints). If you can custom-size your page, use exactly those sizes given for the imageable area.

Media Types and Weights

Your printer will print on labels, paper, envelopes, and transparencies in a number of sizes. The following information provides media types and weights that your printer supports.

Envelopes

Type

Envelopes can be fed through the upper cassette's manual feed slot or using the optional power envelope feeder. Use envelopes with emulsion-based glue to avoid sealing the flaps as envelopes pass through the hot fuser assembly.

Weight

Both Monarch 24lb (90 g/m^2) and COM 10 24lb (90 g/m^2) envelopes are recommended for this printer.

Labels

Type

Use only labels recommended for laser printers, such as Avery 5260. Adhesive label stock has pressure-sensitive (peel-and-stick) adhesive backing.

Weight

The printer supports 17-34 lb (64-128 g/m^2) labels when using manual feed.

Paper

Type

Use only paper recommended for laser printers, such as Hammermill Laser Print. Thicker paper, such as Xerox 4024 (28 lb [105 g/m^2]), is also acceptable when using manual feed.

» Note: We recommend that you do not print on perforated or 3-hole punched paper.

Weight

The printer supports the following weights of paper:

- **Paper cassettes**—17-24 lb (64-90 g/m^2)
- **Manual feed**—17-34 lb (64-128 g/m^2)

Transparencies

Type

Use only transparencies recommended for laser printers, such as Canon brand type D and 3M type PP2500.

Weight

The printer supports 17-34 lb (64-128 g/m^2) transparencies using manual feed.

Media Storage

Improperly stored media increases the chance of paper jams during printing and can drastically affect the print quality of the printed page. Keep media in good condition by storing it

- In its wrapper
- On a flat surface
- In a closed cabinet
- In a cool, dry area

❖

3

Professional Printing

In This Chapter . . .

- About typefaces and fonts
- More typography terms
- Typeface classification
- Resident fonts
- Postscript typeface sampler
- Page design
- References

Introduction

This chapter displays the printer's resident typefaces, offers suggestions for using them, and includes page design tips. A bibliography for graphic design and desktop publishing can be found at the end of this chapter.

About Typefaces and Fonts

Many of the terms and phrases used in desktop publishing are derived from the language of professional printers and typesetters. This section explains common words and phrases used when discussing typefaces.

Typeface

A named design of a set of printed characters, such as Times, that has a specified obliqueness (degree of slant) and stroke weight (thickness of stroke). It does not define a particular size.

Typeface Family

A group of similar typefaces. For example, the Times typeface family consists of four typefaces: Times Roman, **Times Bold**, *Times Italic*, and ***Times Bold Italic***.

Font

A font is a set of characters of the same typeface (such as Times), style (such as *italic*), stroke weight (such as **bold**), and point size (such as 10). Although you hear the term "font" used more generally, as if referring to a typeface, it's really a subset of a typeface.

Character Set

A character set is a collection of symbols designed for various printing applications. Many character sets are composed of the letters (uppercase and lowercase A-Z), digits (0-9), and any symbol (such as blank

space, dollar sign, and ampersand). Other character sets are composed entirely of symbols.

More Typography Terms

Monospacing

The terms “monospaced” and “fixed-pitch” refer to a typeface whose characters all have uniform and equal spacing. These typefaces are useful for spreadsheets and other documents with columnar data. Monospacing is the opposite of proportional spacing.

Proportional Spacing

The term “proportionally spaced” refers to a typeface in which the width of each character varies. For example, the letter “i” is thinner than the letter “m” and therefore takes up less space. Proportional spacing saves page space and is easier on the eye. This manual uses Helvetica, a proportionally spaced typeface.

Because proportionally spaced typefaces place each character according to its individual size, they increase legibility and readability. The following example shows the difference between a monospaced typeface (Courier) and a proportionally spaced typeface (Times):

Alphabet
Alphabet

Bitmapped Font

A bitmapped font is a one in which each character is represented by a set of dot patterns. Each font size requires a different set of dot patterns.

Scalable Font

A scalable font is one in which each character's dot pattern (bitmap) is generated from a mathematical representation (or outline) of the character. Scalable fonts eliminate the need to store many different font sizes.

Point Size

Point size refers to the height of a proportionally spaced typeface. A point is a unit of measure equal to 1/72". Therefore, the larger the point size, the larger the letter. The following example shows text in 8, 10, 12, 24, and 36 point sizes:

Pitch

Pitch refers to the number of characters per horizontal inch (cpi) in a monospaced typeface. Therefore, the larger the pitch, the smaller the letter. For example, a ten-pitch typeface prints ten characters per inch (or 10 cpi) while a twelve-pitch typeface prints twelve characters per inch (or 12 cpi). The following example shows ten-pitch and twelve-pitch Courier:

10-Pitch Courier

12-Pitch Courier

Stroke Weight

Stoke weight (light/medium/bold) is the width (thickness), of the lines (strokes) that make up a character. The following example shows the medium and bold weights of Palatino:

Palatino

Palatino

Italic and Oblique Forms

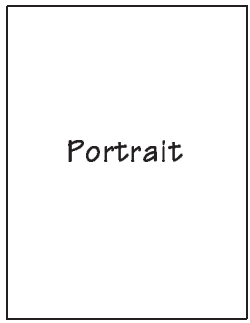
Italic was originally developed in the early sixteenth century as a typeface based on cursive handwriting. Today's italics are still individually crafted typefaces designed to blend with a specific roman (upright) typeface. Oblique (or slanted) type forms, however, are not designed and crafted individually but are mechanically slanted versions of the roman form from which they derive. The following example shows the roman and italic forms of Times and the roman and oblique forms of ITC Avant Garde:

Times Roman
Times Italic

ITC Avant Garde
ITC Avant Garde Oblique

Orientation

Orientation is the direction of the print or image on a page. Portrait orientation reads from left to right, across the narrower dimension of the page. Landscape orientation also reads from left to right but places the print across the wider dimension of the page. Spreadsheet and table applications commonly use landscape printing. Both terms derive from painting; a portrait is usually a vertical view while a landscape is usually a horizontal view.



Typeface Classification

One way of classifying the different typefaces is to group them into the following categories:

- Serif
- Sans serif
- Script
- Pi or symbol

Serif

A serif is a decorative line or tail on the ends of the strokes of a letter. Serifs, usually on the lower half of a letter, have also been referred to as feet or curlicues. Courier, ITC Bookman, New Century Schoolbook, Palatino, and Times are serif typefaces.

In the following example, all the letters except “e” and “o” have serifs:

Times Roman

Sans Serif

Sans serif (“sans” is French for “without”) indicates a typeface without any of these small tails. A sans serif typeface is decorative by the shape and styling of its letters but has less detail than a serif typeface. Helvetica, Helvetica Condensed, Helvetica Narrow, and ITC Avant Garde Gothic are all sans serif typefaces.

In the following example, the slight curving at the bottom of the letters “t” and “a” is not a serif. It is part of the line forming the letter rather than a decorative line added on:

Helvetica

Script

Script typefaces simulate handwriting or brush lettering. Each letter is connected visually, if not physically. ITC Zapf Chancery is a script typeface.

Pi or Symbol

Pi or symbol typefaces are collections of assorted special-purpose characters (for example, decorative, graphic, math, or monetary characters). They are especially useful for highlighting items in lists, providing graphics, and displaying symbols that might otherwise have to be drawn in by hand. Many typefaces today include a complement of the more commonly used pi characters. Symbol and ITC Zapf Dingbats are pi typefaces.

Resident Fonts

Resident PostScript Fonts

The following 39 PostScript fonts are resident in your printer. See your QMS vendor if you are interested in expanding your printer's typeface families.

Serif Fonts

ITC Bookman Light
ITC Bookman Light Italic
ITC Bookman Demibold
ITC Bookman Demibold Italic

Courier
Courier Oblique
Courier Bold
Courier Bold Oblique

New Century Schoolbook Roman
New Century Schoolbook Italic
New Century Schoolbook Bold

New Century Schoolbook Bold Italic

Palatino Roman
Palatino Italic
Palatino Bold
Palatino Bold Italic

Times Roman
Times Italic
Times Bold
Times Bold Italic

Sans Serif Fonts

ITC Avant Garde Gothic Book
ITC Avant Garde Gothic Book Oblique
ITC Avant Garde Gothic Demibold
ITC Avant Garde Gothic Demibold Oblique

Helvetica
Helvetica Oblique
Helvetica Bold
Helvetica Bold Oblique

Helvetica Condensed
Helvetica Condensed Oblique
Helvetica Condensed Bold
Helvetica Condensed Bold Oblique

Helvetica Narrow
Helvetica Narrow Oblique
Helvetica Narrow Bold
Helvetica Narrow Bold Oblique

Script Font

ITC Zapf Chancery Medium Italic

Pi or Symbol Fonts

Σψμβολ (Symbol)

✓♓■♑♌♋♦⬧ (ITC Zapf Dingbats)

All of these typeface families are authentic: they are licensed, they carry the true name, and they have multilingual character sets.

Resident HP PCL Fonts

Your printer has the following resident HP PCL fonts. All fonts can be automatically rotated to landscape orientation. Some are fixed in pitch and point size while others are scalable. Unless otherwise noted, samples are show in 10 point size.

Serif Fonts

Courier 12 pitch 10 point
Courier 12 pitch 10 point Italic
Courier 12 pitch 10 point Bold

Courier 10 pitch 12 point
Courier 10 pitch 12 point Italic
Courier 10 pitch 12 point Bold

Times (scalable)
Times Italic (scalable)
Times Bold (scalable)
Times Italic Bold (scalable)

Sans Serif Fonts

Line Printer 16.66 pitch 8.5 point

Univers (scalable)
Univers Italic (scalable)
Univers Bold (scalable)
Univers Italic Bold (scalable)

Univers Condensed (scalable)
Univers Condensed Italic (scalable)
Univers Condensed Bold (scalable)
Univers Condensed Italic Bold (scalable)

Pi or Symbol Font

♋♓■♑♌♋♦♦ (ITC Zapf Dingbats)

Resident HP-GL Symbol Sets

Your printer has the following resident HP-GL symbol sets. All come in both fixed- and variable-spaced versions, and all are scalable:

9825 Character Set
ANSI ASCII
French/German
ISO French
ISO German
ISO IRV (International Reference Version)
ISO Italian
ISO Norway, Version 1
ISO Norway, Version 2
ISO Portuguese
ISO Spanish
ISO Swedish
ISO Swedish For Names
ISO United Kingdom
JIS ASCII
Katakana
Roman Extensions
Scandinavian
Spanish/Latin American
Special Symbols

Optional Fonts

Your printer supports the following optional fonts:

- **Downloadable Fonts**—Include Type 1 and Type 3 host-resident and printer-card-resident downloadable fonts and Type 42 (PostScript format) downloadable TrueType fonts. TrueType fonts in HP PCL format are not supported.
- **Optional Intellifont SIMM**—Increases the number of PCL 5 fonts from 20 to 37. See chapter 6, “Printer Options,” for more information.
- **Optional Kanji internal IDE hard disk**—Provides 6 Kanji fonts. See chapter 6, “Printer Options,” for more information.

PostScript Typeface Sampler

Following are some tips on using your printer's resident PostScript typefaces appropriately and effectively. All samples are printed 10 points in size.

Helvetica—Helvetica is a popular typeface, a modification of a kind of sans serif typeface called Grotesque. It is used widely in publishing and is admired for its clean lines, although it can be repetitive to the eye, ESPECIALLY WHEN IN ALL CAPS. **Helvetica has a strong bold and *bold oblique* form**. There is no italic form. *Helvetica oblique is the slanted form*. This typeface is proportionally spaced.

Helvetica Condensed—You have a problem! Your space is limited, your copy is too long, and you need a typeface that is bold and attention-getting. Try Helvetica Condensed. This typeface conserves space, gets attention, and is readable. **There is a bold form,** *an oblique form,* ***and a bold oblique form.***

Helvetica Narrow—You have a problem! Your space is limited, your copy is too long, and you need a typeface that is bold and attention-getting. Try Helvetica Narrow. This typeface conserves space, gets attention, and is readable. **There is a bold form,** *an oblique form,* ***and a bold oblique form.***

ITC Avant Garde Gothic—ITC Avant Garde Gothic is a sans serif typeface that originated in 1970. It has a highly stylized look, particularly in some of the symbol characters like % and @. **The bold form is called "demibold";** *the oblique form simulates an italic.* In addition, ***there is a bold, oblique form***. ITC Avant Garde Gothic is useful for headlines and documents that need a strong, contemporary look.

Courier—Courier is a relatively new typeface designed for electric typewriters by IBM. **Courier has a bold form that is thick and stylish.** *The oblique form has its merits and uses, too,* ***as does the bold oblique form.*** The Courier family may be used for counterpoint with Times and Helvetica. Courier is a monospaced, serif typeface.

Times—Times is a popular typeface adapted from older forms. Once used by the London *TIMES*, it is considered an elegant, bookish typeface and has

been used in the United States for decades. This typeface is excellent for a wide variety of applications except for small, condensed formats, where Helvetica proves superior. *Times italic is particularly graceful* ***while the bold italic form is thicker***. Times is a proportionally spaced typeface.

Palatino—Palatino is a graceful typeface designed by Hermann Zapf. It is highly legible and often used for headlines. It has a **bold form** and a *true, crafted italic form*. ***The bold italic form is also elegant.*** Palatino is a popular and useful typeface, always in good taste.

New Century Schoolbook—Like Palatino, New Century Schoolbook is a highly legible typeface that is popular for many general purposes. It was designed in this century, based on scientific research into typographic legibility. New Century Schoolbook has a **bold**, an *italic*, and a ***bold italic*** form. It is a practical, sturdy typeface.

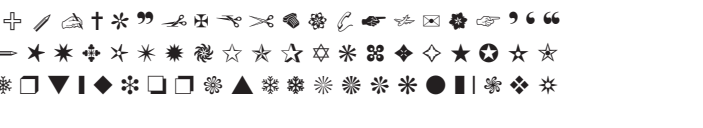
ITC Bookman—ITC Bookman is a strongly styled, updated typeface. Although modified to improve legibility, it dates back to the hand-set print era. ITC Bookman is used for headlines and displays since they need a strong style. ITC Bookman has **a bold form that is somewhat playful** while the *light italic* and ***bold italic*** forms are more elegant.

ITC Zapf Chancery Medium Italic—Dating from 1979, ITC Zapf Chancery Medium Italic is a graceful typeface that has the look of calligraphy. Designed by Hermann Zapf, it is useful for invitations, announcements, and text that needs elaborate flourishes. This typeface has only one form, the medium italic used here.

Symbol—The Symbol typeface is used for technical and mathematical notation. It also contains Greek letters.

1 2 3 4 5 6 7 8 9 0 − = ∴ ~ ! ≅ # ∃ % ⊥ & ∗ ( ) _ + | { } [ ] : ∀ ; ϑ ? , . / Θ Ω E P T Ψ Y I O Π A Σ Δ Φ Γ H ϑ K Λ Z Ξ X ς B N M θ ω ε ρ τ ψ υ ι ο π α σ δ φ γ η φ κ λ ζ ξ χ ϖ β ν μ

ITC Zapf Dingbats—ITC Zapf Dingbats, also designed by Hermann Zapf, is a typeface of whimsical characters with a wide variety of uses.



Page Design

One rule to remember when designing documents is to keep it simple. Avoid cluttering your documents with unnecessary font changes, which can detract from the document.

Consider your reader first. Select the typeface that is best for your particular document, and consider the meaning of your words. What are you trying to communicate? A strong, no-nonsense typeface, like Helvetica, proclaims its message loud and clear. For this reason, sans serif type is often used for signs, as in **NO PARKING**. However, Helvetica can be overwhelming, so a font like Times or New Century Schoolbook may suit your words better.

The skillful use of typeface in page design can also increase readability. Good newspapers are an example of the use of text placement for maximum readability. The typeface chosen for text and headlines varies in size, and text is contained in columns two to three inches wide. Thus, the eye does not have to travel far, and readers do not lose their place.

Other aspects of design such as word spacing (justified or unjustified), line spacing, the spacing of letters within words, and uppercase and lowercase letters all affect the legibility of your page.

While page design has no set rules, there are many books available on page layout and design as well as on typography to guide you in making effective choices. Some of these references are listed in the following section.

References

For more information on PostScript printing, graphic design, and desktop publishing, refer to the following publications:

- Adobe Systems, Inc. *PostScript Language Program Design*. Reading, MA: Addison-Wesley, 1988. ISBN 0-201-14396-8.

- Adobe Systems, Inc. *PostScript Language Reference Manual*. Reading, MA: Addison-Wesley, 1990. ISBN 0-201-18127-4.
- Adobe Systems, Inc. *PostScript Language Tutorial and Cookbook*. Reading, MA: Addison-Wesley, 1985. ISBN 0-201-10179-3.
- Bonura, Larry S. *Desktop Publisher's Dictionary*. Plano, TX: Wordware, 1989. ISBN 1-55622-106-1.
- Campbell, Alastair, ed. *The Graphic Designer's Handbook*. Philadelphia: Running Press, 1983. ISBN 0-89471-226-8.
- Holzgang, David, *PostScript Programmer's Reference Guide*. Glenview, IL: Scott, Foresman, 1989. ISBN 0-673-38575-4.
- Holzgang, David, *Understanding PostScript Programming*. Alameda, CA: Sybex, 1988. ISBN 0-89588-566-2.
- Karsnitz, John R., *Graphic Arts Technology*. Albany, NY: Delmar, 1984. ISBN 0-8273-1828-6.
- *PostScript Language Journal,* the PostScript industry newsletter, West Orange, NJ: Pipeline Associates. ISSN 0891-5873.
- Smith, Ross. *Learning PostScript: A Visual Approach*. Berkeley: Peachpit Press, 1990. ISBN 0-938151-12-6.
- White, Jan V. *Graphic Design for the Electronic Age*. New York: Watson-Guptill, 1988. ISBN 0-8230-2122-X.

❖

4

Printer Configuration

In This Chapter . . .

- Methods of configuration
- Configuration menu
- Operator control menu
- Administration menu
- Installation menu

Introduction

This chapter begins by listing and describing the different ways you can configure your printer to meet your special printing needs.

The next section describes how to use the printer control panel to access the configuration menu and how to make configuration changes.

The rest of the chapter provides basic printer configuration information about some of the configuration menu options. The *QMS CrownNet Interface System Administrator's Guide* (shipped with your printer) contains the CrownNet submenu configuration information for the Ethernet interface. In both guides, menu features are grouped according to task. Each feature is introduced, then a table describes the feature's location in the configuration menu, the available choices for that feature, and the factory default (the value set at the factory).

Methods of Configuration

You have four ways to configure your printer to meet your printing needs:

- Through an application
- Through PS Executive Series Utilities
- Through printer commands
- Through the printer control panel
- Through a remote console (for network users)

Using an Application

Using your application is the best way to control your printer since most printing is done on a per-job basis. This helps prevent confusion in network environments and saves you from making changes at the printer control panel. Your application documentation explains how to

control your printer settings: probably by choosing options from a printing menu.

Applications use printer drivers to send appropriate commands to the printer for requested tasks. If your application doesn't have a QMS 1725 Print System driver, you can select a comparable PostScript driver, such as another QMS driver or a LaserWriter driver. However, comparable drivers may not allow you to access all of your printer's features, such as 600x600 dpi printing, duplexing, or collating.

Using PS Executive Series Utilities

You can also use the PS Executive Series Utilities (shipped with your printer) to control the printer from your host. See the README file on the utilities disk for information on installing the utilities, and see the utilities on-line help for details on using the software.

Using Printer Commands

Printer commands (such as PostScript operators, QMS Document Option Commands [DOCs], and HP PCL and HP-GL commands) can enable job-specific features your application or page description language can't access. See the *QMS Crown Technical Reference* manual (shipped on disk with your printer) as well as the *QMS Crown Document Option Commands* manual, and the *HP PCL5 Emulation Technical Reference* (both available for purchase from your QMS vendor), for information on these commands. See appendix C, "Document Option Commands," of this manual for a list of DOCs this printer supports.

Using the Control Panel

Your printer is configured at the factory for most typical printing environments, so most users don't have to use the control panel often. However, if you do need to change a printer setting for all print jobs (not just on a per-job basis), you can do so through the control panel. If you're working in a shared printing environment, your system administrator should be the only person to make changes through the printer's control panel.

Using a Remote Console

Many of the configuration choices that can be made at the control panel can also be made through a remote console if you're connected to a network via an optional network interface. To avoid confusion in a shared printing environment, only the system administrator should make configuration changes.

» Note: If a remote console has the printer off line, pressing the Online/Offline key will not take effect until the console puts the printer back on line.

Configuration Menu

The printer's configuration menu allows you change the default printer configuration settings. Any changes made to the configuration will reside as new default settings and affect all subsequent print jobs.

The options in the configuration menu are organized under three main menus:

- **Operator Control Menu**

  Use this menu to select document processing options such as copy count, choosing input and output paper bins, chaining input bins, and duplexing (if a duplexing unit is installed). Document processing selections are usually specified within individual jobs since each job has its own requirements. However, if there's no way of specifying these selections within an application, use the control panel to change selections, send the job, and then change the defaults back.

  » Note: Defining document processing selections for a particular job through the control panel is not recommended in a shared environment. When many systems are using the same printer, there's no way of making sure that no other jobs are sent to the printer while the defaults are changed. The Operator Control menu may be password protected with an optional security card if the system administrator does not want users changing defaults.

- **Administration Menu**

  Use this menu to maintain printer-host communication information, and for selecting and configuring printer emulations, configuring special pages, printing engine calibration, and configuring hard disks (if installed).

» *Note: For information on printer-host communication using the Ethernet interface or any options under the CrownNet submenu (Administration/Communications/Network 2/CrownNet), see chapter 2, "Printer Configuration," in the QMS CrownNet Interface System Administrator's Guide.*

- **Installation Menu**

  Use this menu to establish passwords for the Operator Control and Administration menus. This menu displays only when an optional security card is installed.

Accessing the Configuration Menu

To access the configuration menu, make sure the printer is idle (`IDLE` displays in the message window), then press the Online/Offline key to take the printer off line (the Online/Offline indicator is not lighted), and finally press the Menu key.

Example

The following table shows how to use control panel keys to access the printer configuration menu. Press the control panel keys in the order shown. The printer responds by displaying a status message or configuration menu in the message window.

» *Note: You may need to press the Next key more than one time to advance through the list of options.*

Press this key	to...	The message window reads...
Online/ Offline	Turn off the Online/Offline indicator and ready the printer for configuration.	`IDLE`
Menu	Access the configuration menu.	`CONFIGURATION OPERATOR CONTROL`

The printer must be off line and idle before you can access the configuration menu.

Selecting Configuration Menu Options

Once you access the configuration menu, you use the control panel keys to move through the menu. Use the following keys:

Press this key	to...
Next	Advance to the next option or submenu within a menu.
Previous	Return to the previous option or submenu within a menu.
Select	Select an option or enter a submenu.

Example

To change the default printer emulation from ESP to PostScript, press the control panel keys in the order shown in the following table.

» Note: You may need to press the Next key more than once to advance through the list of selections or options.

Press this key	to...	The message window reads...
Online/ Offline	Turn off the Online/Offline indicator and ready the printer for configuration.	IDLE
Menu	Access the configuration menu.	CONFIGURATION OPERATOR CONTROL
Next	Advance to the Operator Control/ Administration menu.	CONFIGURATION ADMINISTRATION
Select	Access the Administration menu	ADMINISTRATION COMMUNICATIONS
Select	Access the Communications menu.	COMMUNICATIONS TIMEOUTS
Next	Advance to the Communications/Parallel menu.	COMMUNICATIONS PARALLEL
Select	Access the Parallel menu.	PARALLEL MODE
Next	Advance to the Parallel/Emulation menu.	PARALLEL EMULATION

Select	Access the Emulation menu.	EMULATION ESP
Previous	Advance to the Emulation/PostScript menu.	EMULATION POSTSCRIPT
Select	Select PostScript as the default emulation.	POSTSCRIPT IS SELECTED
	After 3 seconds you are returned to the Parallel/Emulation menu.	PARALLEL EMULATION
Online/ Offline or Menu	Exit from the menu (Online/Offline) or return to the previous menu (Menu). You are prompted to save your change(s).	SAVE CHANGES? NO
Next	Advance to the Save Changes?/Yes option.	SAVE CHANGES? YES
Select	Select Yes. The printer finishes printing any print jobs in process, saves your change, and returns to idle.	IDLE

Changing Character Information

Sometimes, rather than selecting an option, you need to enter character information. A character is any letter, digit, or symbol. A field is a group of characters that have meaning. Use the printer control panel to enter character information in the message window during printer configuration. The maximum length of the message window is 16 characters.

Entering character information through the control panel is similar to setting the time and date on a digital watch. You enter one character at a time. The current input character flashes. Use the following keys to change the current input character:

Press this key	to...
Next	Advance to the next choice for the current input character.
Previous	Return to the previous choice for the current input character.

Once you have changed the current input character, use the following keys to move the cursor to another input character:

Press this key	to...
Select	Advance the cursor to the next character.
Menu	Return the cursor to the previous character.

To exit from the character selection process, move the cursor to the last character of the input field (the character farthest to the right) and press the Select key, or move to the first character of the input field (the character farthest to the left) and press the Menu key.

When you exit, the printer verifies character information and confirms it in the message window. If character information is valid, you're returned to the previous menu; if it's invalid, you're returned to the input field. Press the Menu key to cancel any changes to the character information.

If the current character information is longer than the value that you need to enter, replace each extra character with a space. The printer interprets a space at the end of character information as a blank.

Example

To change the HP-GL emulation scaling percent, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message or configuration menu in the message window. An underline indicates the current input character in the message window.

» Note: You may need to press the Next key more than one time to advance through the list of selections or options.

Press this key	to...	The message window reads...
Online/ Offline	Turn off the Online/Offline indicator and readies the printer for configuration.	`IDLE`
Menu	Access the configuration menu.	`CONFIGURATION OPERATOR CONTROL`
Next	Advance to the Administration menu.	`CONFIGURATION ADMINISTRATION`

Select	Access the Administration menu	ADMINISTRATION COMMUNICATIONS
Next	Advance to the Communications/ Emulation menu.	COMMUNICATIONS EMULATIONS
Select	Access the Emulations menu.	EMULATIONS ESP DEFAULT EMUL
Next	Advance to the Emulations/HP-GL menu.	EMULATIONS HP-GL
Select	Access the HP-GL menu.	HP-GL PLOTTER
Next	Advance to the HP-GL/Scaling Percent menu.	HP-GL SCALING PERCENT
Select	Access the Scaling Percent menu.	SCALING PERCENT 100
Previous	Lower the current character to 0.	SCALING PERCENT 000
Select	Select 0 and move the current character to the next 0.	SCALING PERCENT 000
Next (5 times)	Advance the current character to 5.	SCALING PERCENT 050
Select	Select 5 and move the current character to the last 0.	SCALING PERCENT 050
Select	Select 50 as the default scaling percent.	50 IS SELECTED
	After 3 seconds you are returned to the HP-GL/Scaling Percent menu.	HP-GL SCALING PERCENT
Online/ Offline or Menu	Exit from the menu (Online/Offline) or return to the previous menu (Menu). You are prompted to save your change(s).	SAVE CHANGES? NO
Next	Advance to the Save Changes?/Yes option.	SAVE CHANGES? YES
Select	Select Yes. The printer finishes printing any print jobs in process, saves your change, and returns to idle.	IDLE

Saving Configuration Changes

Before the printer can accept print jobs with configuration changes, the changes must be saved.

Example

To save your configuration changes, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window.

Press this key	to...	The message window reads...
Online/ Offline or Menu	Exit from the menu (Online/Offline) or return to the previous menu (Menu). You are prompted to save your change(s).	SAVE CHANGES? NO
Next	Advance to the Save Changes?/Yes option.	SAVE CHANGES? YES
Select	Select Yes. The printer finishes printing any print jobs in process, saves your change, and returns to idle.	IDLE
Online/ Offline	Turn on the Online/Offline indicator and ready the printer to accept and print jobs.	IDLE

» Note: The printer may need to be restarted before certain changes to the Administration menu take effect. Some changes restart the printer automatically while others display the message REBOOT NOW? in the control panel message window. If this message appears, select YES to restart the printer and have the change(s) take effect immediately, or select NO to wait until you manually restart the printer for changes to take effect.

Canceling Configuration Changes

If you change a configuration option and then decide to cancel that change, you can do so when exiting the configuration menu.

Example

To cancel your configuration changes, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window.

Press this key	to...	The message window reads...
Online/ Offline or Menu	Exit from the menu (Online/Offline) or return to the previous menu (Menu) and be prompted to save your change.	SAVE CHANGES? NO
Select	Select No. The printer finishes printing any print jobs in process, does not save your changes, and returns to idle.	IDLE
Online/ Offline	Turn on the Online/Offline indicator and ready the printer to accept print jobs.	IDLE

Setting the Message Window Language

Status messages and configuration menus can be displayed in the message window in English, French, German, or Spanish. If you need to change the message window language, use the Keypad Language option in the Administration/Miscellaneous menu.

Menu	Administration/Miscellaneous/Keypad Language
Choices	English, French, German, Spanish
Default	English
Notes	The printer must be restarted for changes to the Keypad Language menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Restoring the Factory Default Configuration

If you need to cancel all of the configuration changes you have made, you can reset all of the configuration settings to their factory defaults.

Menu	Administration/Miscellaneous/Restore Defaults
Choices	Yes, No
Default	No
Notes	This process takes several minutes to complete.

Operator Control Menu

The Operator Control menu consists of the following submenus:

Copies	**Collation**
Orientation	**Inputbin**
Outputbin	**Chain Inputbins**
Manual feed size	**Def. duplex**
Tumble duplex	

Copies

While it is usually preferable to select in your application the number of copies you want to print, you can change the default number of copies for all print jobs through the printer control panel.

Menu	Operator Control/Copies
Choices	001-999
Default	001
Notes	Sets the default number of copies for all subsequent print jobs.

Collation

Use this option if you have 12 MB of memory or a hard disk installed to arrange multiple copies of a document in sequential order. This option helps to reduce network traffic.

Menu	Operator Control/Collation/
Choices	On, Off
Default	Off
Notes	For additional information on collation, refer to Collating Output in chapter 3, “Advanced Printing Features,” in your *Operations* guide.

Orientation

Specifies whether text and graphics are placed on the page in a portrait or landscape orientation.

Menu	Operator Control/Orientation
Choices	Landscape, Portrait
Default	Portrait

Inputbin

Allows you to select the default cassette (inputbin) from which media is drawn into the printer.

Menu	Operator Control/Inputbin
Choices	Upper, Lower
Default	Upper
Notes	The current default inputbin is indicated by the appropriate LED on the print control panel.

Outputbin

Use this option to indicate the default output bin (tray). You can choose to have paper exit the printer at either the upper bin or the face-up bin.

Menu	Operator Control/Outputbin
Choices	Upper, face-up
Default	Upper

Chain Inputbins

Allows you to "chain" input bins (cassettes) so that when the first input bin empties, the printer will automatically draw media from the second input bin with the same size and type of media.

Menu	Operator Control/Chain Inputbins
Choices	On—Switch to the next input bin with the same size and type of media when the default input bin is empty. Off—Don't switch inputbins; use only the default input bin.
Default	On
Notes	Use the Operator Control/Inputbin menu to set the default input bin. Make sure the two bins use the same size media.

Manual Feed Size

Use this option to select the size of the print medium to be fed manually.

Menu	Operator Control/Manual Feed Size
Choices	Letter, Legal, A4, Executive, Com9, Com10, DL, Monarch, and Envelope (see notes)
Default	Letter
Notes	The Envelope setting should be used if your envelope size doesn't match any of the other listed envelopes sizes.

Def. Duplex

The Def[ault] Duplex option allows you to print on the front and back of each page.

Menu	Operator Control/Def. Duplex
Choices	On, Off
Default	Off
Notes	This is an optional feature and supported only if the duplexing unit and enough memory are installed. See the “Memory Submenu” later in this chapter.

Tumble Duplex

Prints jobs so they can be bound at the top edge (flip-chart style).

Menu	Operator Control
Choices	On, Off
Default	Off
Notes	The Operator Control/Def. Duplex option must also be turned on. This is an optional feature and supported only if the duplexing unit is installed.

Administration Menu

The Administration menu consists of the following submenus:

Communications	**Emulations**
Special Pages	**Startup Options**
Memory	**Engine**
Miscellaneous	

Communications

This menu contains several options that allow you to configure the printer's communication parameters to match the host and application parameters.

» *Note: This section contains information on Timeouts, Serial, Parallel and Network 2 menus. For information on printer-host communication using the Ethernet interface or any options located under the CrownNet submenu (Administration/Communications/Network 2/CrownNet), see chapter 2, "Printer Configuration," of the QMS CrownNet Interface System Administrator's Guide.*

Setting Timeouts

The Timeouts options limit the amount of time the printer waits on transmission from the host for various types of data.

Setting a PostScript Emulation Timeout

The PostScript emulation timeout is the maximum number of seconds the PostScript emulation waits for incoming data.

Menu	Administration/Communications/Timeouts/PS Wait Timeout
Choices	00000-99999
Default	00030 (30 sec.)
Notes	A value of 000 is the same as infinity (no timeout). The job is closed and the next job in the queue begins if all of the following occur: ■ No additional data is received during the specified period of time. ■ The interface didn't time out. An EOD (end-of-document commands) was not seen. When a print job is sent from a Macintosh, the PS Wait timeout is automatically changed to 00300 (5 min.). Large print jobs, such as those generated by graphics or computer-aided design applications, require timeouts of 00300 (5 min.).

Setting an Emulation Timeout

The emulation timeout is the maximum number of seconds emulations other than PostScript (such as HP-GL, HP PCL5, and Lineprinter) wait for incoming data.

Menu	Administration/Communications/Timeouts/Emul Timeout
Choices	00000-99999
Default	00005 (5 sec.)
Notes	A value of 000 is the same as infinity (no timeout).

Setting a Print Job Timeout

The print job timeout is the maximum number of seconds the printer processes a print job before it ends the job.

Menu	Administration/Communications/Timeouts/Job Timeout
Choices	00000-99999
Default	00000 (infinity, no timeout)
Notes	A value of 000 is the same as infinity (no timeout).

Setting an ESP Timeout

The ESP timeout is the maximum number of seconds the printer waits to match an emulation before printing the job in the default emulation.

Menu	Administration/Communications/Timeouts/ESP Timeout
Choices	00000-99999
Default	00003 (3 sec.)
Notes	A value of 000 is the same as infinity (no timeout).

Setting Serial Interface Parameters

Use the Administration/Communications/Serial menu to set the serial interface communication values used for printer-host communication.

Mode

Enables or disables the serial port.

Menu	Administration/Communications/Serial/Mode
Choices	Interactive—Establish two-way communication between the host and the printer. Noninteractive—Establish one-way communication from the host to the printer. Disabled—Turn off serial communication with the host. The printer stops accepting print jobs over the serial interface.
Default	Interactive
Notes	The printer must be restarted for changes to the Mode menu to take effect. You can either let the printer restart automatically after you save the change and exit the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Emulation

Sets the serial interface emulation.

Menu	Administration/Communications/Serial/Emulation
Choices	ESP, Hexdump, PostScript, PCL5, HPGL, CCITT, Lineprinter Other optional emulations also appear, if installed.
Default	ESP

Minimum Number of Kilobytes for Spooling

Sets the minimum number of kilobytes of system memory allocated to the serial interface.

Menu	Administration/Communications/Serial/Min K Spool
Choices	00000-99999
Default	00015

Notes	This value must be less than K Mem For Spool. A 00000 value does not turn off the spooling buffer for the serial interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization. The printer must be restarted for changes to the Min K Spool menu to take effect. You can either let the printer restart automatically after you save the change and exit the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Spooling Timeout

Sets the number of seconds the interface waits for data from the host before terminating a spooled print job.

Menu	Administration/Communications/Serial/Spool Timeout
Choices	00000-99999
Default	00030

End Job Mode

Enables (and identifies an end-of-job sequence) or disables data stream sensing for the end-of-document (EOD) command.

Menu	Administration/Communications/Serial/End Job Mode
Choices	None—The printer recognizes only the PostScript ^D command. QMS EOD—The printer recognizes only the QMS %%EndOfDocument command. HP EOD—The printer recognizes only the HP <ESC>%12345X command.
Default	None
Notes	See chapter 5, “Additional Technical Information,” for details on how to implement this feature on your QMS 1725E Print System.

Default Job Priority

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously. For example, you can give jobs received via the serial interface priority over jobs received via the parallel and Ethernet interfaces.

Menu	Administration/Communications/Serial/Def Job Prio
Choices	001-100 (highest-lowest priority)
Default	001 (highest priority)

Baud Rate

Sets the rate data is transmitted (bits per second) over the serial interface.

Menu	Administration/Communications/Serial/Baud Rate
Choices	300, 600, 1200, 2400, 4800, 9600, 19200, 38400
Default	9600
Notes	Baud rates of 19200 and 38400 require hardware flow control (Administration/Communications/Serial/Hdwe Flow Ctl menu).

Parity

Sets the check bit used to identify data transmission errors.

Menu	Administration/Communications/Serial/Parity
Choices	None, Odd, Even
Default	None
Notes	The printer's parity setting must match that of the host or application. Use the Administration/Communications/Serial/Ignore Parity menu to specify how the printer handles parity errors.

Ignore Parity Errors

Specifies how the printer should handle parity errors.

Menu	Administration/Communications/Serial/Ignore Parity

Choices	Off—Ignore parity errors. The printer prints its best interpretation of the character(s) affected by the error. On—Don't ignore parity errors. The printer replaces the character(s) affected by the error with a question mark.
Default	Off
Notes	Use the Administration/Communications/Serial/Parity menu to set parity.

Receive Software Flow Control

Sets the software communication protocol used by the printer to control communication from the host computer.

Menu	Administration/Communications/Serial/Rcv Sw Flow Ctl
Choices	ETX/ACK, Robust XON/XOFF, None, XON/XOFF
Default	XON/XOFF

Transmit Software Flow Control

Sets the software communication protocol used by the host computer to control communication with the printer.

Menu	Administration/Communications/Serial/Xmit Sw Flow Ctl
Choices	ETX/ACK, None, XON/XOFF
Default	None

Data Bits

Sets the number of data bits transmitted per character.

Menu	Administration/Communications/Serial/Data Bits
Choices	7 Bits, 8 Bits
Default	8 Bits

Stop Bits

Sets the number of stop bits transmitted per character.

Menu	Administration/Communications/Serial/Stop Bits
Choices	1 Bit, 2 Bits
Default	1 Bit

Hardware Flow Control

Controls the flow of data between the printer and the host.

Menu	Administration/Communications/Serial/Hdwe Flow Ctl	
Choices	DSR POL DSR DTR POL DTR RTS CTS	Normal, reverse Off, on Normal, reverse Off, on Off, on Off, on
Defaults	DSR POL DSR DTR POL DTR RTS CTS	Normal Off Normal On Off Off
Notes	If the host uses hardware flow control, set this option to match the type used by the host. However, to download printer system software to flash ROM via the serial port, RTS and CTS must be set to On, and the cable pinouts must be connected as shown in appendix B, “Technical Specifications.”	

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a serial interface to a PostScript printer.

Menu	Administration/Communications/Serial/PS Protocol

Choices	Normal—Enable standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators. Normal Fixed—Enable standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators. Binary—Enable binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Binary Fixed—Enable binary communications protocol. Print jobs cannot alter this value through PostScript operators. Data in the printable ASCII range also prints.
Default	Normal
Notes	See chapter 5, “Additional Technical Information,” for a full discussion of PS Protocol.

Setting Parallel Interface Parameters

Use the Administration/Communications/Parallel menu to set the parallel interface values used for printer-host communications.

Mode

The parallel interface supports Centronics parallel communication as well as IEEE 1284 bidirectional parallel communication.

Menu	Administration/Communications/Parallel/Mode
Choices	Interactive—Establish two-way communication between the host and the printer. Noninteractive—Establish one-way communication from the host to the printer. Disabled—Turn off parallel communication with the host. The printer stops accepting print jobs over the parallel interface.
Default	Noninteractive

Notes	The printer must be restarted for changes to the menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer. See chapter 5, “Additional Technical Information,” for a discussion of the different modes.

Emulation

Sets the parallel interface emulation.

Menu	Administration/Communications/Parallel/Emulation
Choices	ESP, Hexdump, PostScript, PCL5, HPGL, CCITT, Lineprinter Other optional emulations also appear, if installed.
Default	ESP

Minimum Number of Kilobytes for Spooling

Sets the minimum number of kilobytes of system memory allocated to the parallel interface.

Menu	Administration/Communications/Parallel/Min K Spool
Choices	00000-99999
Default	00015
Notes	This value must be less than K Mem For Spool. A 00000 value does not turn off the spooling buffer for the parallel interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization. The printer must be restarted for changes to the Min K Spool menu to take effect. You can either let the printer restart automatically after you save the change and exit the configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Spooling Timeout

Sets the number of seconds the interface waits for data from the host before terminating a spooled print job.

Menu	Administration/Communications/Parallel/Spool Timeout
Choices	00000-99999
Default	00030

Data Bits

Sets the number of data bits transmitted per character.

Menu	Administration/Communications/Parallel/Data Bits
Choices	7 Bits, 8 Bits
Default	8 Bits

End Job Mode

Enables (and identifies an end-of-job sequence) or disables data stream sensing for the end-of-document (EOD) command.

Menu	Administration/Communications/Parallel/End Job Mode
Choices	None—The printer recognizes only the PostScript ^D command. QMS EOD—The printer recognizes only the QMS %%EndOfDocument command. HP EOD—The printer recognizes only the HP <ESC>%12345X command.
Default	None
Notes	See chapter 5, “Additional Technical Information,” for details on how to implement this feature on your QMS 1725E Print System.

Default Job Priority

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously.

Menu	Administration/Communications/Parallel/Def Job Prio
Choices	001-100 (highest-lowest priority)
Default	001 (highest priority)
Notes	For example, you can give jobs received via the parallel interface priority over jobs received via the serial and Ethernet interfaces.

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a parallel interface to a PostScript printer.

Menu	Administration/Communications/Parallel/PS Protocol
Choices	Normal—Enable standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators. Normal Fixed—Enable standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators. Binary—Enable binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Binary Fixed—Enable binary communications protocol. Print jobs can not alter this value through PostScript operators. Data in the printable ASCII range also prints.
Default	Normal
Notes	See chapter 5, “Additional Technical Information,” for a full discussion of PS Protocol.

Setting Network 2 Options

CrownNet

For information on options and defaults found in this submenu, see chapter 2, “Printer Configuration,” in the *QMS CrownNet Interface System Administrator’s Guide*.

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a parallel interface to a PostScript printer.

Menu	Administration/Communications/Network 2/PS Protocol
Choices	Normal—Enable standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators. Normal Fixed—Enable standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators. Binary—Enable binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Binary Fixed—Enable binary communications protocol. Print jobs can not alter this value through PostScript operators. Data in the printable ASCII range also prints. QBinary (Quoted Binary)—Enable binary communications protocol (BCP). Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism for the special characters and ^D (EOF). QBinary Fixed—Enable binary communications protocol (BCP). Print jobs cannot alter this value through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism for the special characters and ^D (EOF).

Default	Normal
Notes	See chapter 5, “Additional Technical Information,” for a full discussion of PS Protocol.

Default Job Priority

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously.

Menu	Administration/Communications/Network 2/Def Job Prio
Choices	001-100 (highest-lowest priority)
Default	001 (highest priority)
Notes	For example, you can give jobs received via the Ethernet interface priority over jobs received via the parallel and serial interfaces.

Emulations

Use the Administration/Emulations menu to set the parameters for the available printer emulations. Optional printing emulations appear only if installed.

» Note: To choose an emulation or ESP for a particular interface, use the appropriate interface menu in the Administration/Communications menu.

Setting an ESP Default Emulation

The emulation sensing processor (ESP) feature of the QMS 1725E Print System analyzes incoming print jobs and identifies which emulation the printer will use. The ESP Default Emul sets the ESP default emulation used when ESP is unable to identify the language of a print

job. This allows the system administrator to select alternate default emulations.

Menu	Administration/Emulations/ESP Default Emul
Choices	HPGL, Lineprinter, PostScript, PCL5, CCITT
Default	PCL5
Notes	You must turn the printer off and back on again for the change to take effect. For more information on ESP, see chapter 5, “Additional Technical Information.”

Setting PostScript Parameters

This menu allows you to select a PostScript emulation level. This is useful if you have files prepared in an application which is not fully compatible with Adobe’s PostScript Level 2 page description language.

Menu	Administration/Emulations/PostScript/Emulation Level
Choices	Level 2—For PostScript Level 2 files and most Level 1 files. Level 1 B/W—For files that contain only black-and-white PostScript Level 1 operators. This mode does not support the PostScript color operators; the use of color operators could cause the print job to fail. Level 1 Color—For files that contain color PostScript Level 1 operators. This mode accepts color PostScript Level 1 operators and translates these commands to the appropriate grayscale. This is the recommended setting for Level 1 compatibility since it contains all of the commands in Level 1 B/W and the color commands.
Default	Level 2

Setting HP PCL5 Parameters

The *QMS Crown Technical Reference* (shipped on disk with your printer) and the *HP PCL5 Emulation Technical Reference* (available for purchase from your QMS vendor) contain more detailed information on this emulation. In addition, *HP PCL5C Technical Support Notes*, available free through the QMS Bulletin Board, Q-FAX, and

CompuServe, has information on HP PCL5C. (See appendix A, “QMS Customer Support,” to find out how to access the bulletin board, Q-FAX, and CompuServe.) In addition, appendix C of this guide has information on the PCL5 Document Option Commands.

Default Font

Sets the default font for this emulation.

Menu	Administration/Emulations/PCL 5/Default Font
Choices	Courier12, Courier12Bold, Courier12Italic, Courier10, Courier10Bold, Courier10Italic, Lineprinter, Times*, Times*Italic, Times*Bold, Times*BldItalic, Univ*, Univ*Italic, Univ*Bold, Univ*BldItalic, UnivCond*, UnivCond*Italic, UnivCond*Bold, UnivCond*BldItlc, Select by Index
Default	Courier12
Notes	* represents a scalable font (default point size [12 points] is used to scale the font and produce the characters in the selected size). If you use Select by Index to select a font by its font index, the printer uses the Administration/Emulations/PCL5/Default Font Idx value to choose the default font.

Symbol Set

Sets the character set used by the HP PCL5 emulation.

Menu	Administration/Emulations/PCL 5/Symbol Set
Choices	Roman-8, PC-850, PC8-US, PC8-DN, ECMA-94, Legal, HPGerman, HPSpanish, ISO-2, ISO-4, ISO-6, ISO-10, ISO-11, ISO-14, ISO-15, ISO-16, ISO-17, ISO-21, ISO-25, ISO-57, ISO-60, ISO-61, ISO-69, ISO-84, ISO-85, Desktop, PS Math, Math 8, Microsoft-Pub, Pi-Font, PS-Text, Ventura-Intl, Ventura-Math, Ventura-US, Windows, PS-Zapf-Dingbats, Ventura-Dingbats, Zapf-Dingbats100, Zapf-Dingbats200, Zapf-Dingbats300
Default	Roman-8

Notes	Not all symbol sets are available with certain resident fonts. The Desktop, PS Math, Math 8, Microsoft-Pub, Pi-Font, PS-Text, Ventura-Intl, Ventura-Math, Ventura-US, and Windows symbol sets cannot be used with the resident bitmap fonts Courier 10, Courier 10 Italic, Courier 10 Bold, Courier 12, Courier 12 Italic, Courier 12 Bold, and LinePrinter. The five dingbat symbol sets (PS-ZapfDingbats, Ventura-Dingbats, Zapf-Dingbats100, Zapf-Dingbats200, and Zapf-Dingbats300) can be used with all fonts. If a mismatch between a symbol set and font occurs, the standard PCL font selection mechanism is used to locate a font that matches the selected symbol set. With the standard set of fonts distributed for your printer, this matches the Times* font, but other user-installed fonts could change this result. See the *HP PCL 5 Technical Reference* for more information on selecting PCL 5 fonts.

Lines/Inch x100

Sets the number of lines printed per inch.

Menu	Administration/Emulations/PCL 5/Lines /Inch x100
Choices	0100-4800
Default	0600

Line Termination

Adds an indicator which controls the way the printer interprets CR (carriage return) and LF (line feed) characters.

Menu	Administration/Emulations/PCL 5/Line Termination
Choices	CR=CR, LF=LF CR=CR+LF, LF=LF CR=CR, LF=CR+LF CR or LF=CR+LF
Default	CR=CR, LF=LF

Point Size x100

Identifies the point size for scalable fonts in 0.25 point increments.

Menu	Administration/Emulations/PCL 5/Point Size x100
Choices	00025-99975 (0.25-999.75 points)
Default	01200 (12 points)
Notes	If the font is not scalable or if a bitmap font is specified, this setting is ignored.

Retain Temporary Fonts and Macros

Allows you to choose whether to retain temporary HP PCL5 fonts and macros at the end of each print job.

Menu	Administration/Emulations/HP PCL 5/Retain Temporary

Choices	Off—Reset PCL to its default state at the end of each PCL print job, execute an implicit <ESC>E at the start and end of the job, and delete any temporary fonts, macros, and patterns. On—Reset PCL to its default state at the end of each PCL print job. Temporary fonts, macros, and patterns from previous PCL print jobs are retained in memory after the print job has completed. You can recall these downloaded fonts, macros, and patterns from within your PCL file without having to download them again. On Compatibility—Retain the entire state of PCL as well as the temporary macros, fonts, and patterns from previous PCL jobs unless you do one of the following: ■ Change any PCL front panel option ■ Send any PCL-specific DOC—except the emulation DOC ■ Send any other DOC, such as number of copies, duplex, orientation, or inputbin ■ Send a PCL job from a different communications port—for example, if the PCL print environment is set for PCL jobs to print from the parallel port, and a PCL job is sent from the serial port. If any one of these occurs, the PCL state is reset to the new default, and the previous state is lost.
Default	Off

Scalable Fonts

Specifies whether to enable or disable the printing of HP PCL5 scalable fonts by an application.

Menu	Administration/Emulations/HP PCL 5/Scalable Fonts
Choices	Enable—Allow selection of scalable fonts. When you print PCL4 documents, PCL5 may substitute scalable fonts that could cause your PCL 4 documents to print incorrectly. Disable—Print using bitmap fonts only.
Default	Enable

Notes	This feature may be useful when printing PCL4 documents which may inadvertently select unwanted scalable fonts.

Default Font Index

Sets the default font index when Select by Index is chosen in the Administration/Emulations/PCL 5/Default Font menu. If a font by the same index number exists, it is selected as the default font. This font must be a cartridge or downloaded soft font.

Menu	Administration/Emulations/PCL 5/Default Font Idx
Choices	00000-32767
Default	Depends on cartridge or downloaded font(s)

Monochrome HP-GL/2

Allows your printer to emulate a monochrome or color plotter.

Menu	Administration/Emulations/PCL 5/Monochrome GL/2
Choices	Off—Emulate a color plotter (8 pens). Since a monochrome print system has only 2 pen colors (black and white), grayscale patterns are substituted for other colors. On—Emulate a monochrome plotter (2 pens).
Default	On

Notes	When set to off, this option maps pen colors as follows: Pen 0=White, Pen 1=Black, Pen 2=Red, Pen 3=Green, Pen 4=Yellow, Pen 5=Blue, Pen 6=Magenta, Pen 7=Cyan. When set to on, this option tells the printer to map each pen to its assigned color, then convert the color to a grayscale using the National Television System Committee (NTSC) color standard for luminosity coefficients (Additive System): Y = 0.30R + 0.59G + 0.11B Example of how to use the color standard formula: WhiteY = [1*0.30) + (1*0.59) + (1*0.11)]—100% gray BlackY = [0*0.30) + (0*0.59) + (0*0.11)]—0% gray RedY = [1*0.30) + (0*0.59) + (0*0.11)]—30% gray GreenY = [0*0.30) + (1*0.59) + (0*0.11)]—59% gray YellowY = [1*0.30) + (1*0.59) + (0*0.11)]—89% gray BlueY = [0*0.30) + (0*0.59) + (1*0.11)]—11% gray MagentaY = [1*0.30) + (0*0.59) + (1*0.11)]—41% gray CyanY = [0*0.30) + (1*0.59) + (1*0.11)]—70% gray

Download Location

Controls the default storage location of PCL objects (fonts, macros, and patterns) when it is not otherwise specified through Document Option Commands.

Menu	Administration/Emulations/PCL 5/Downld Location
Choices	Disk—All downloaded PCL objects are stored in the default disk resource, if present. Memory—All downloaded PCL objects are stored in temporary storage in RAM.
Default	Disk
Notes	Document Option Commands specifying resources override this option on a per-job basis. If this option is set to Disk and no hard disk is installed, memory is used as the default storage location. If the printer has both a hard disk and a large amount of memory, setting this option to Memory enhances printer performance.

Setting HP-GL Parameters

Fifteen configuration choices are available. The *QMS Crown Technical Reference* (shipped on disk with your printer) contains more detailed information on this emulation.

Plotter

Identifies the HP-GL plotter type.

Menu	Administration/Emulations/HPGL/Plotter
Choices	7550A, 7475A, 7470A, Colorpro
Default	7550A

Scaling Percent

Identifies the percentage to reduce or enlarge an image.

Menu	Administration/Emulations/HPGL/Scaling Percent
Choices	001-150 (1-150%)
Default	100 (100%)
Notes	To scale plots, select the paper size originally used for the plot in the Paper Type menu, and then enter the reduction or enlargement needed to fit the plot on the new page in the Scaling Percent menu. If necessary, enter new x,y coordinates in the Origin menu to reposition the plot on the page.

Origin

Sets the image offset from the plotter's origin in 0.01" increments.

Menu	Administration/Emulations/HPGL/Origin/X Direction
Choices	0000-8500 (0"-8.5")
Default	0000

Menu	Administration/Emulations/HPGL/Origin/Y Direction
Choices	00000-11000 (0"-11.0")
Default	00000

Reverse Image

Determines whether an image is printed in reverse.

Menu	Administration/Emulations/HPGL/Reverse Image
Choices	On—Print a white image on a black background. Off—Print a black image on a white background.
Default	Off

Enhanced Mode

Increases the resolution of a downloaded character.

Menu	Administration/Emulations/HPGL/Enhanced Mode
Choices	On—Uses an increased resolution for the grid Off—Uses standard resolution for the grid
Default	Off
Notes	The HP-GL user-defined character (UC) command downloads and draws characters with an encoding scheme that uses pen control movements and coordinate sequences. The characters are drawn on a grid that is superimposed on the character plot cell.

Expand Mode

Defines a larger imageable area for the selected media type. This increased imageable area affects the default placement of the scaling points P1 and P2.

Menu	Administration/Emulations/HPGL/Expand Mode
Choices	On—Expands the imageable area. Off—Doesn't expand the imageable area.
Default	Off

Notes	Setting this option to On partially determines the range of plotter units for a selected media type. When the plotter senses the media type, it automatically sets the hard clip limits to 0.591"/15 mm on three sides and to 1.537"/39 mm on the fourth side. However, if Expand Mode is set to On, then the limits are set to 0.197"/5 mm on three sides and 1.143"/29 mm on the fourth side. The HP-GL emulation senses the media size when the Paper Type is set to Scale to Paper or when it is set to a particular media size through the control panel or through a QMS Document Option Command.

Paper Type

Identifies the original image's paper size.

Menu	Administration/Emulations/HPGL/Paper Type
Choices	Scale to Paper, A (letter/8.5"x11.0"), A4 (210x297 mm), B (11.0"x17.0"), A3 (297x420 mm)
Default	Scale to Paper

Pen 1 - Pen 8

Sets the width and color for the eight plotter pens. A width and a color option are available for each pen.

» Note: See chapter 5, "Additional Technical Information," for more information on the HP-GL emulation color encoding equation.

Menu	Administration/Emulations/HPGL/Pen *x*/Width
Choices	00-60 (0.1-6.0 mm)

Default	Pen 1—7 (0.7 mm) Pen 2—3 (0.3 mm) Pen 3—3 (0.3 mm) Pen 4—3 (0.3 mm) Pen 5—3 (0.3 mm) Pen 6—3 (0.3 mm) Pen 7—3 (0.3 mm) Pen 8—3 (0.3 mm)

Menu	Administration/Emulations/HPGL/Pen *x*/Color
Choices	Black, Violet, Brown, Gray - 25%, Gray - 50%, Gray - 75%, Red, Orange, Yellow, Green, Blue, Cyan, Magenta
Default	Pen 1—Black (100% black) Pen 2—Black (100% black) Pen 3—Red (70% black) Pen 4—Green (41% black) Pen 5—Blue (89% black) Pen 6—Violet (59% black) Pen 7—Orange (25.8% black) Pen 8—Brown (50% black)
Notes	A setting of "0" defaults the pen width to the pixel setting of "1." Cyan=30% black, magenta=59% black, and yellow=11% black. See chapter 5, "Additional Technical Information," for more information on the HP-GL emulation color encoding equation.

Setting Lineprinter Parameters

Twelve configuration options are available. The *QMS Crown Technical Reference* (shipped on disk with your printer) has more information on each of these options.

Font

Sets the printer fonts for the current print job.

Menu	Administration/Emulations/Lineprinter/Font
Choices	All printer-resident PostScript fonts.
Default	Courier
Notes	Any PostScript fonts available on the printer can be used. To see a list of available PostScript fonts, print an advanced status page through the printer configuration menu (Administration/Special Pages/Status Page Type) or through the PS Executive Series Utilities.

Point Sz 100ths

Sets point size (in .01 point increments) of the font for the current print job.

Menu	Administration/Emulations/Lineprinter/Point Sz 100ths
Choices	00400-25600 (4-256 points)
Default	00880 (8.8 points)

Character Map

Specifies the type of character map to be used.

Menu	Administration/Emulations/Lineprinter/Character Map
Choices	ASCII, EBCDIC
Default	ASCII

Line Numbering

Specifies if a five-digit number is to be prefixed to the beginning of each line.

Menu	Administration/Emulations/Lineprinter/Line Numbering
Choices	On—Number all lines. Off—Don't number lines.
Default	Off

Tab Stops

Specifies the number of spaces between tab stops.

Menu	Administration/Emulations/Lineprinter/Tab Stops
Choices	0-256
Default	8

Line Feed is Carriage Return-Line Feed

Specifies whether each line feed (LF) in the print job is translated to a carriage return/line feed (CRLF) combination.

Menu	Administration/Emulations/Lineprinter/LF is CRLF
Choices	On—Translate all line feeds to carriage return/line feed combinations. Off—Use lines feeds only as line feeds.
Default	On

Carriage Return is Carriage Return-Line Feed

Specifies whether each carriage return (CR) in the print job is translated to a carriage return/line feed (CRLF) combination.

Menu	Administration/Emulations/Lineprinter/CR is CRLF
Choices	On—Translate all carriage returns to line feeds. Off—Use carriage returns only as carriage returns.
Default	Off

Form Feed is Carriage Return-Form Feed

Specifies whether each form feed (FF) in the print job is translated to a carriage return/form feed (CRFF) combination.

Menu	Administration/Emulations/Lineprinter/FF is CRFF
Choices	On—Translate all form feeds to carriage return/form feed combinations. Off—Use form feeds only as form feeds.
Default	On

Orientation

Specifies whether text and graphics are placed on the page in a portrait or landscape orientation.

Menu	Administration/Emulations/Lineprinter/Orientation
Choices	Landscape, Portrait
Default	Portrait

Autowrap

Specifies whether long lines are to be wrapped to the next line instead of being truncated.

Menu	Administration/Emulations/Lineprinter/CRISCRLF
Choices	On—Wrap long lines. Off—Truncate long lines.
Default	On

Lines Per Page

Specifies the number of lines printed on a page before an automatic page eject.

Menu	Administration/Emulations/Lineprinter/Lines per Page
Choices	1-128
Default	87
Notes	Interline spacing is set to the selected point size. Logical pages consisting of more lines than specified are split into multiple pages.

Margins

Defines the left, right, top, and bottom margins in 1/100" increments.

Menu	Administration/Emulations/Lineprinter/Margins	
Choices	Bottom	0-1700 (0"-17.00")
	Left	0-1700 (0"-17.00")
	Right	0-1700 (0"-17.00")
	Top	0-1700 (0"-17.00")

Default	Bottom 0 Left 0 Right 0 Top 0

Special Pages

Use the Administration/Special Pages menu to print special pages, such as status pages, header pages, and trailer pages. See the *QMS Crown Document Option Commands* manual (available for purchase from your QMS vendor) for detailed information on the contents of these special pages.

Working with Status Pages

Printing a status page is a two-step procedure: Identify the type of status page you want to print, and then print it.

Identifying a Status Page Type

Two types of status pages are available:

Menu	Administration/Special Pages/Status Page Type
Choices	Standard—Lists printer identification information, current memory configuration, timeouts, communication settings, input buffer sizes, and available fonts. Advanced—Contains the same information as the standard status page as well as configuration menu settings, fonts, and downloaded emulations.
Default	Standard

Printing a Status Page

Prints a status page.

Menu	Administration/Special Pages/Print Status
Choices	Yes, No

Default	No
Notes	The type of status page printed is determined by the selection made in the Status Page Type menu.

Calibration Page

Prints a calibration page.

Menu	Administration/Special Pages/Calibration Page
Choices	Yes—Prints calibration page. No—Calibration page will not be printed.
Default	No
Notes	See the Administration/Engine/Image Alignment menu for calibration instructions.

Working with Header Pages

A header page is a separator page that prints before a print job to help users sort their jobs. The information on the header page can be customized. See the *QMS Crown Document Option Commands* manual (available for purchase from your QMS vendor) for more information.

Enabling/Disabling Header Pages

Menu	Administration/Special Pages/Header Page
Choices	On—Print a header page before each job. Off—Don't print a header page before each job.
Default	Off

Identifying a Header Page Input Source

You can select the input bin (tray or cassette) from which the printer pulls media when printing the header page.

Menu	Administration/Special Pages/Header Inputbin
Choices	Upper—Pull header page media from the upper input bin. Lower—Pull header page media from the lower input bin.
Default	Upper

Notes	If you used the Administration/Engine/Inputbin *x* Name options to change the names of the input bins, these names replace Upper and Lower in the message window.

Working with Trailer Pages

A trailer page is a separator page that prints after a print job to help users sort out their jobs and, if requested, identify print job errors.

Enabling/Disabling Trailer Pages

Menu	Administration/Special Pages/Trailer Page
Choices	Off—Don't print a trailer/error page for each print job. On—Print a trailer/error page for each print job. On Error—If any print job errors exist, print a trailer page that lists the errors as well as other trailer page information. Errors Only—If any print job errors exist, print a trailer page that lists the errors but omits other trailer page information.
Default	Off
Notes	See the *QMS Crown Document Option Commands* manual (available for purchase from your QMS vendor) for more information.

Identifying a Trailer Page Input Source

You can select the input bin (tray or cassette) from which the printer pulls media when printing the trailer page.

Menu	Administration/Special Pages/Trailer Inputbin
Choices	Upper—Pull trailer page media from the upper input bin. Lower—Pull trailer page media from the lower input bin.
Default	Upper
Notes	If you used the Administration/Engine/Inputbin *x* Name options to change the names of the inputbins, these names replace Upper and Lower in the message window.

Printer Start-Up Options

The Administration/Startup Options menu allows you to configure your printer to run certain options automatically when you turn it on.

Enabling/Disabling the Start-Up Page

By default, the printer prints a start-up page when you turn it on. The start-up page lists basic information about the printer, such as its name, the PostScript emulation level and version, and various printer settings. However, you can turn the start-up page off to conserve paper and toner.

Menu	Administration/Startup Options/Do Start Page
Choices	Yes—Print a start-up page each time the printer is turned on. No—Don't print a start-up page each time the printer is turned on.
Default	Yes
Notes	If you used the Administration/Engine/Inputbin *x* Name options to change the names of the input bins, these names replace Multipurpose, Lower, and Optional in the message window.

Enabling/Disabling the SYS\START File

If you have a hard disk and Do Sys Start is enabled, when the printer is turned on, the controller checks the hard disk for a PostScript file named SYS\START and executes this file.

Menu	Administration/Startup Options/Do Sys Start
Choices	Yes—Check the hard disk for and execute the SYS\START file when the printer is turned on. No—Don't check the hard disk for a SYS\START file.
Default	Yes
Notes	This file does not print. Information on creating a SYS\START file is available in the *QMS Crown Technical Reference Manual* (shipped on disk with your printer) and also via Q-FAX (see appendix A, "QMS Customer Support," for information on using Q-FAX).

Loading the PostScript Error Handler

Error Handler is a diagnostic tool that identifies PostScript errors encountered during a print job.

Menu	Administration/Startup Options/Do Error Handler
Choices	Yes—Load the Error Handler. No—Don't load the Error Handler.
Default	No
Notes	Refer to the *PostScript Language Reference Manual* (Adobe Systems Incorporated, Reading, PA: Addison-Wesley, 1990, ISBN 0-201-18127-4) for more information on PostScript errors.

Memory

This submenu allows you to allocate the printer's memory (RAM) among the various memory clients. The flexibility of defining memory available to clients allows experienced users to optimize the printer's performance according to a given set of conditions.

Caution: Misallocated memory may hinder the performance level of the printer.

Configuring Spooling

The K Mem for Spool, listed on the status page as Host Input, is the total number of kilobytes of RAM allocated to all spooling buffers. This memory client stores incoming data from the various interfaces until it is processed and printed.

Menu	Administration/Memory/K Mem for Spool
Choices	00112-06144
Default	00148

Notes	This value must be greater than the sum of the Min K Spool for all installed and enabled interfaces. If you change the K Mem for Spool value, the printer automatically restarts after you save your changes and exit from the configuration menu.

When the sum of the Min K Spool for all interfaces is less than K Mem for Spool, memory is allocated as follows:

1 Interfaces with Min K Spool (in the Administration/Communications menu) value greater than zero to receive their specified allocation.

2 Half of the remaining memory is equally distributed among any interfaces with a Min K Spool value of zero.

3 The other half of the remaining memory is called float memory. This memory is divided among all ports with a Min K Spool value of zero. If only one port has a Min K Spool value of zero, that port receives all float memory.

PostScript Heap

The K Mem for PSHeap, listed on the status page as Heap, is the number of kilobytes of RAM dedicated to the PostScript emulation interpreter. This memory client holds downloaded PostScript emulation fonts, operators, and forms.

Menu	Administration/Memory/K Mem for PSHeap
Choices	01024-08192
Default	01308
Notes	If you change the K Mem for PSHeap value, the printer automatically restarts after you save your changes and exit from the configuration menu.

PostScript Fonts

The K Mem for PS Fonts, listed on the status page as Font Cache, is the number of kilobytes of RAM dedicated to caching previously scaled

bitmap representations of fonts for the PostScript emulation interpreter.

Menu	Administration/Memory/K Mem for PS Fonts
Choices	00088-08192
Default	00116
Notes	This memory setting can reduce the number of times a PostScript font must be converted from outline form to bitmap form, thus reducing processing time. If you change the K Mem for PS Fonts value, the printer automatically restarts after you save your changes and exit from the Configuration menu.

Emulation

The K Mem Emulation is the number of kilobytes of RAM to be used by non-PostScript emulations for temporary storage and for loading optional emulations.

Menu	Administration/Memory/K Mem Emulation
Choices	00768-08192
Default	00796
Notes	If you receive an emulation error, you may need to increase the amount of memory for this client. If you change the K Mem Emulation value, the printer automatically restarts after you save your changes and exit from the configuration menu.

Emulation (Temporary)

The K Mem Emul Tmp is the number of kilobytes of RAM to be used by non-PostScript emulations for storing downloaded (soft) fonts, forms, or macros.

Menu	Administration/Memory/K Mem Emul Tmp
Choices	00256-08192
Default	00256

Notes	This value must be greater than the sum of the Min K Spool for all installed and enabled interfaces.Data in this client disappears when the printer is turned off. This client is listed as Temporary on the status page. Increasing this client's size increases the number of PCL downloaded fonts which can be accepted. If you change the K Mem Emul Tmp value, the printer automatically restarts after you save your changes and exit from the Configuration menu.

Display List

The K Mem Display is the number of kilobytes of RAM dedicated to the display lists. The display list holds the intermediate representation of pages to be printed. Increasing the size of the Display List increases the number of pages that can be collated. The maximum number of pages that can be collated is 100 pages.

Menu	Administration/Memory/K Mem Display
Choices	00128-12288
Default	00156
Notes	If you change the K Mem Display value, the printer automatically restarts after you save your changes and exit from the configuration menu.

Disk Cache

The K Mem Disk Cache is the number of kilobytes of RAM dedicated to the disk cache. This memory client speeds file system throughput on any installed hard disks by storing frequently used data in system memory instead of continually storing it to and retrieving it from a hard disk.

Menu	Administration/Memory/K Mem Disk Cache
Choices	00032-08192
Default	00036

Notes	If the Intellifont SIMM is installed and your printer has 12 MB of memory or less, the Disk Cache size must be set to 48 KB before the printer will recognize the Intellifont SIMM. If your printer has more than 12 MB of memory, the Disk Cache will automatically be set to the required amount. If no hard disk is used, the disk cache should be set to the minimum. The printer then reallocates the released memory to other clients that need additional memory. If one or more hard disks are used, they remain unavailable until sufficient memory is available to the disk cache. If you change the K Mem Disk Cache value, the printer automatically restarts after you save your changes and exit from the configuration menu.

The amount of memory needed for this memory client depends on the size and number of hard disks, the number of subdirectories on each disk, and the amount of memory dedicated to caching.

» *Note: If sufficient memory is available to the disk cache, all disks are accessible. If insufficient memory is available to the disk cache, some disks may be accessible while others may not be.*

The recommended amount of memory for the disk cache client is

- 120 KB minimum
- 0.5 KB per MB of disk storage total for all disks

For example, the recommended amount of memory for the disk cache for a single 120 MB hard disk is 180 KB, and for two 120 MB hard disks it is 240 KB. These are recommended values. The printer will still operate with a smaller cache, but decreased performance may result.

Frame Buffer

The Frame Buffer memory client holds rasterized or bitmapped images of page faces which are ready to be sent to the print engine. A frame holds the contents of each single page image.

If you are uncertain about how to configure your printer's memory, use only the Administration/Memory/Frame Buffer menu. Or use this menu as a starting point before trying manually to configure your printer's memory. It provides a simple method of defining how much memory should go to each of the memory clients. Menu options allow you to specify the largest media size you plan to use for each resolution. Memory is then automatically allocated to the memory clients that require it. Any excess memory is allocated to the excess memory client. See chapter 5, "Additional Technical Information," for more information on memory and the frame buffer client.

» Note: The printer does not allow you to choose features that do not work with the amount of memory currently installed. The Frame Buffer option does not change the media size. It just ensures that you have enough memory allocated to the appropriate clients to print on the requested media size.

Menu	Administration/Memory/Frame Buffer/300 dpi
Choices	Letter/A4, legal
Default	Letter/A4

Menu	Administration/Memory/Frame Buffer/600 dpi
Choices	Letter/A4, legal
Default	Letter/A4

Printer Memory

MB Printer Mem, listed as System Use on the status page, is the number of megabytes of RAM available to be split among the various memory clients. The size of this client's memory limits the number of jobs that may be queued simultaneously. When this client's memory is exhausted, the printer slows down, and the hosts are forced to wait.

Menu	Administration/Memory/MB Printer Mem
Choices	00012-00064
Default	Depends on the amount of memory installed.

Notes	This memory client is not user-configurable. If disk swapping is enabled (Administration/Memory/Enable Disk Swap menu), the amount of memory displayed is larger than the actual amount of memory installed in the printer.

» Note: Memory that is added to the printer goes into a shared pool that is split between K Mem Display and K Mem Framebuff. This shared memory increases printer throughput but is not guaranteed to be available to either client at any given time. If additional memory is added to another client, that memory is taken from the shared memory or from another client if the other client is decreased. Make sure you allocate memory to the appropriate clients each time additional memory is installed. After reconfiguring your memory, press the Online/Offline key and the printer automatically reboots.

Enable Disk Swap

Enable Disk Swap gives your printer virtual memory capability for all memory clients through the creation of a “swap file” on the printer’s hard disk. The default size of the swap file depends on the amount of RAM installed. The more RAM installed, the larger the default swap file size will be. The printer uses this file as an extension of its memory. As the physical RAM fills, the printer can swap the contents to the hard disk file to allow more space. This file swapping between disk and RAM occurs at various times throughout the printing process and is completely transparent.

» Note: The printer must have a hard disk to take advantage of this feature.

Menu	Administration/Memory/Enable Disk Swap
Choices	Off—Don’t enable disk swapping. On—Enable disk swapping.
Default	Off

Notes	If disk swapping is enabled and the hard disk is removed or not turned on, the printer **does not** automatically reset to the factory defaults. It assumes there was an error and allows for recovery, such as turning on the external hard disk before turning on the printer. The printer must be restarted for changes to the Enable Disk Swap menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Printer Engine Features

Through the Administration/Engine menu you can set print engine-related parameters.

Adjusting the Image Alignment

This option allows you to adjust the horizontal and vertical placement of printed images.

To check image alignment, print a standard status page (Administration/Special Pages/Print Status). When the printer is placing images properly, the alignment angle bar in the lower-left corner of the status page is 0.5"/12.7 mm from the left and bottom edges of the page. If the angle bar is off, use the Administration/Engine/Image Alignment option to align the image horizontally and vertically in pixel increments (1/300" or 0.08 mm).

» Note: Engine constraints may limit the accuracy of pixel alignment.

Horizontal Offset

Menu	Administration/Engine/Image Alignment/Horiz Offset
Choices	000-300 (0.00"/0 mm-1.00"/25.4 mm)
Default	100 (0.33"/.84 mm)
Notes	Values above 100 move the image to the right. Values below 100 move the image to the left.

Vertical Offset

Menu	Administration/Engine/Image Alignment/Vertical Offset
Choices	000-300 (0.00"-1.00")
Default	100 (0.33"/.84 mm)
Notes	Values above 100 move the image down. Values below 100 move the image up.

Setting Default Paper

Default Paper is used when the default media is requested but the default input bin is missing from the engine so there's no way to sense the media size automatically.

Menu	Administration/Engine/Default Paper
Choices	Letter, A4
Default	Letter

Setting Inputbin x Name

These options are used to name input bins 1 and 2.

Menu	Administration/Engine/Inputbin x Name
Choices	Up to 16 alphanumeric characters
Default	Inputbin 1 "upper" / Inputbin 2 "lower"

Setting Outputbin x Name

These options are used to name output bins 1 and 2.

Menu	Administration/Engine/Outputbin x Name
Choices	Up to 16 alphanumeric characters
Default	Outputbin 1 “upper”/ Outputbin 2 “face up”

Setting Default Resolution

This option sets the print engine’s default resolution.

Menu	Administration/Engine/Def Resolution
Choices	300 dpi—300x300 dpi resolution. 600 dpi—600x600 dpi resolution.
Default	600 dpi
Notes	If your printer is configured for duplex printing and has less than 16 MB RAM, 600x600 dpi isn’t available on all media sizes. Duplexing using 600x600 resolution requires additional memory. See the High-Resolution and Duplexing section in chapter 3, “Advanced Printing Features,” of the *Operation* guide.

Setting Gamma Correction

This option sets the print engine’s gamma correction.

Menu	Administration/Engine/Gamma Correction
Choices	On, off
Default	Off
Notes	Gamma correction “on” produces optimum print quality for halftones. For information on gamma correction, see chapter 5, “Additional Technical Information,” in this guide.

Enabling/Disabling the Warning Buzzer

You can enable or disable the warning buzzer the print engine sounds when it encounters an error (such as paper out).

Menu	Administration/Engine/Buzzer
Choices	On, Off
Default	Off

Specifying Page Recovery Action

When a media jam or other similar error occurs, the printer can reprint the job starting from the page on which the jam occurred.

Menu	Administration/Engine/Page Recovery
Choices	On—Reprints from the page on which the jam or error occurred. Off—Doesn't reprint a print job when a jam or error occurs.
Default	Off

Setting Toner Out Action

You can configure the printer to stop or to continue printing when a TONER OUT error message is displayed in the message window.

Menu	Administration/Engine/Toner Out Act.
Choices	Continue—Printing when a TONER OUT message displays. Stop— No printing when a TONER OUT message displays.
Default	Continue

Setting Energy Conservation

The Energy Saver option specifies whether the printer changes to a low-power state (the engine remains on, but the fuser turns off) after the printer is inactive for a user-defined length of time. When a print job is received, the printer returns to normal power within 90 seconds.

Menu	Administration/Engine/Energy Saver

Choices	15 minutes, 30 minutes, 1 hour, 2 hours, 3 hours—(Idle time before activation of low-power state). Off—Use normal power all of the time.
Default	1 hour

Enabling Offset Stacking

Setting this option determines if print jobs are offset in the face-down output bin.

Menu	Administration/Engine/Offset Stacking
Choices	On, off
Default	On

Setting Manual Feed Timeout

This option allows you to set the amount of time the printer waits for paper to be inserted into the manual feed slot before it cancels the job.

Menu	Administration/Engine/Man. Feed Timeout
Choices	000 - 300 seconds
Default	060 seconds
Notes	A value of 000 sets the timeout to infinity

Setting the Letterhead Option

This option only appears if the duplexing unit is installed on the printer. The letterhead option allows you to print both simplex and duplex jobs on letterhead paper from the same input bin (cassette) without having to sort the pages manually.

Menu	Administration/Engine/Letterhead
Choices	On, off
Default	Off
Notes	Letterhead paper must be loaded face down in the input bin with the bottom edge inserted first into the printer. You may notice a decrease in the printing speed depending on the mix of simplex and duplex pages.

Miscellaneous

The Miscellaneous submenu allows you to change printer configurations, such as defaults and message window language.

Restoring the Factory Default Configuration

If you need to cancel all of the configuration changes you have made, you can reset all of the configuration settings to their factory defaults.

Menu	Administration/Miscellaneous/Restore Defaults
Choices	Yes, No
Default	No
Notes	This process takes several minutes to complete.

Reboot System

You can use this selection to restart the printer without turning off the power switch. You would use this when you've made changes to the configuration and need to restart the printer before the new settings will be acknowledged.

Menu	Administration/Miscellaneous/Reboot System
Choices	Yes, No
Default	No

New Flash Image

The system software in your printer is stored on flash ROM, read-only memory that can be erased and written to "in a flash." This allows you to update the system software without opening the printer and installing new PROMs.

Menu	Administration/Miscellaneous/New Flash Image
Choices	Yes, No
Default	No
Notes	The procedures for downloading a new flash image are in chapter 6, "Printer Options," in this guide.

Setting the Message Window Language

Status messages and configuration menus can be displayed in the message window in English, French, German, or Spanish.

Menu	Administration/Miscellaneous/Keypad Language
Choices	English, French, German, Spanish
Default	English
Notes	The printer must be restarted for changes to the Keypad Language menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Hard Disks

Use the Administration/Disk Operations menu to perform disk operation processes that appear only when optional hard disks are installed.

Caution: If you connect to this printer an external hard disk you previously used with an earlier QMS Crown printer (QMS 860, QMS 860 Plus, QMS 1060, QMS 1060E, QMS 1660, QMS 1660E, QMS-PS 1700, QMS 1725, QMS-PS 2000, QMS 2025, QMS-PS 3200, or QMS 3225, QMS 4525, QMS ColorScript 210/230, QMS ColorScript Laser 1000, or QMS *magicolor* Printer), this QMS 1725E Print System software release will automatically reorganize the files on the hard disk when the printer is turned back on again. (The printer release number is listed on both the start-up and the status page.) Once this reorganization is done, the files on the hard disk can no longer be accessed if the hard disk is reattached to an earlier QMS Crown printer.

This reorganization process takes time. If, when you first turn the printer on after attaching a previously used hard disk, it does not come on line immediately, be patient. Interrupting the reorganization process could cause all files on the hard disk to be lost.

Installing an Optional Font

Use the Administration/Disk Operations/Install Options menu to add optional fonts to the hard disk from a font card. This selection copies data from the card to the hard disk. See chapter 6, “Printer Options,” for instructions.

Removing an Optional Font

Use the Administration/Disk Operations/Remove Option menu to remove a previously installed optional font. See chapter 6, “Printer Options,” for instructions.

Formatting a Hard Disk

Use the Administration/Disk Operations/Format Disk menu to format a hard disk. See chapter 6, “Printer Options,” for instructions.

Collation

This option is used to specify which disk and how much of that disk should be used to store collated print jobs when the jobs cannot be accommodated by RAM space. The printer scrolls through all the installed hard disk addresses. Refer to “Collating Output,” in chapter 3, “Advanced Printing Features,” in the *Operations* guide for more information.

Spool Overflow

This option is used to specify which disk and how much of that disk should be used to store print jobs when the jobs can not be accommodated by RAM. The maximum setting varies according to the disk size installed in the printer.

Installation

The Installation menu appears only if a security card is installed. The system administrator uses the Installation menu to set passwords for the Operator Control and Administration menus.

Operator Password

Allows you to enter a password used to enter the Operator menu when enabled.

Menu	Installation/Operator Passwrd
Choices	Up to 16 alphanumeric characters
Default	Blank (no password)
Notes	Enable the password in the Installation/Use Operator Pwd menu.

Use Operator Password

Determines if a password is required to enter the Operator menu.

Menu	Installation/Use Operator Pwd
Choices	On—Require a password to enter the Operator Control menu. Off—Don't require a password to enter the Operator Control menu.
Default	Off
Notes	Enter the password in the Installation/Operator Passwrd menu.

Admin Password

This represents the password used to enter the Administration menu when enabled.

Menu	Installation/Admin Password
Choices	Up to 16 alphanumeric characters
Default	Blank (no password)
Notes	Enable the password in the Installation/Use Admin Pwd menu.

Use Admin Password

Determines if a password is required to enter the Administration menu.

Menu	Installation/Use Admin Pwd
Choices	On—Require a password to enter the Administration menu. Off—Don't require a password to enter the Administration menu.
Default	Off
Notes	Enter the password in the Installation/Admin Password menu.

Using Passwords

When a password is required to enter the Operator Control or Administration menu, the message window will display

```
ENTER PASSWORD
```

if you press the Select key to enter the menu. Enter the password or press the Menu key to return to the menu.

If you specify the correct password, access to the selected menu is granted. However, if you enter an invalid password, the message window flashes

```
INVALID PASSWORD
```

for three seconds and then returns you to the Configuration menu.

Configuring Optional Features

Several of the optional features available affect printer configuration and the Configuration menu. When an optional feature is installed, its configuration information merges into the Configuration menu. See chapter 6, "Printer Options," in this guide for more information.

❖

5

Additional Technical Information

In This Chapter . . .

- The Emulation Sensing Processor (ESP)
- Simultaneous Interface Operations (SIO)
- Communication modes
- Gamma correction
- Memory
- End job mode
- IEEE 1284 bidirectional parallel interface modes
- PS Protocol option

Introduction

This chapter provides additional technical information on ESP and SIO features, gamma correction, memory management, end job mode, parallel interface modes, the PS Protocol option, and HP-GL color-to-grayscale conversion.

The Emulation Sensing Processor (ESP)

The 1725E Print System employs ESP technology, which works with most popular commercially available applications, and uses a form of artificial intelligence to analyze incoming file data and select the appropriate printer emulation from those installed on the printer. Your printer can interpret printer languages without your having to change printer switch settings or send software commands to accommodate different printer languages.

When your printer is in ESP mode, you can easily print files prepared for a PostScript printer or an HP LaserJet. The file prints correctly as long as it begins with the traditional PostScript or HP PCL commands for such items as page formats and job parameters (number of copies, page margins, fonts).

The QMS 1725E Print System prints almost any file sent in an emulation ESP technology understands, whether you have one, two, or more hosts, and whether you are communicating through a parallel, serial, Ethernet or optional LocalTalk interface. Most users never have to change from ESP mode to another mode.

Simultaneous Interface Operations (SIO)

All your printer's ports are active at the same time, so you can attach serial, parallel, Ethernet, and optional interface cables and communicate to all ports from four host computers or networks simultaneously.

Communication Modes

You can either allow your printer to operate in its default ESP mode or configure its ports to accept jobs in only a particular emulation mode (for example, PostScript emulation only, HP PCL only, or HP-GL emulation only). The default printer communication settings can be changed through the Configuration menu, which you access through the control panel—in the Administration/Communications menu, you can choose a default emulation for the parallel, serial, and Ethernet interfaces, and in the Administration/Emulations menu, you can configure the printer defaults for each emulation mode. (The optional LocalTalk interface uses only PostScript.)

Advanced users can also use PostScript operators to reconfigure printer ports. The *QMS Crown Technical Reference* contains information about PostScript operators. Generally, it is best to keep your printer in ESP mode. Since ESP mode is the factory default, all you have to do to use it initially is connect your host and printer and then send a file.

About Gamma Correction

Gamma Correction is the compression or expansion of the ranges of dark or light shades in a printed image to provide the best copy of scanned images.

Terms

Several terms related to gamma correction are explained in this section to help you better understand the gamma correction concept.

Gray Levels

Gray levels are a progressive series of gray tones between black and white. Gray levels are obtained by varying the ratio of black to white dots. The number of gray levels depends on printer resolution and screen frequency.

Halftone

A halftone is a printed copy of a scanned image as a set of tiny, evenly spaced spots of variable diameter that, when printed, visually blur together to appear as shades of gray. Your QMS 1725E Print System creates halftone cells by mapping each gray level onto a collection of dots.

Factors that influence the quality of a halftone are

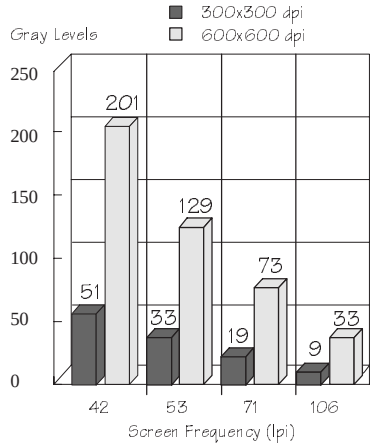
- Device resolution of the printer
- Screen frequency of the halftone
- Quality of the scan
- Diameter of the laser beam

Changing print resolution from 300x300 dpi to 600x600 dpi smooths the resulting spots. In addition, because each spot is represented by a wider range of dots, a greater number of gray levels is possible. The laser beam is part of the print engine, so it's not a factor you can adjust.

Screen Frequency

Screen frequency is the number of lines of dots that compose each inch of a halftone screen. The screen frequency of a halftone determines the number of spots used to represent gray levels in a given area. A 71 lines per inch (lpi) screen frequency has 71 lines of dots for each inch of the halftone screen.

The following illustration shows the relationship between screen frequency, gray levels, and print resolution. As the screen frequency increases, the number of gray levels decreases.



The number of gray levels that your printer can produce depends on the screen frequency and the print resolution. The default value for screen frequency using 600 dpi is 71 lpi. This typically allows 73 different levels of gray. The default value for screen frequency using 300 dpi is 53 lpi. This typically allows 33 different levels of gray.

You can change screen frequency through your application or by using the PostScript **setscreen** operator. The *QMS Crown Technical Reference Manual* contains information on **setscreen**.

The extra gray levels available through higher resolution provide a smoother shift from the darkest black to very light grays while higher resolution provides sharper image outlines.

Gamma Correction Concept

Often in scanned images, gray scaling may be too light or dark to show details clearly. Using gamma correction on a gray-scale image is similar to using a graphic equalizer on a home stereo; the range of gray levels is adjusted for the best possible image. This sharpens

overall midrange contrast while blacks (shadows) and whites (highlights) keep their original values. Gamma correction sets grayscale values specified through the PostScript **setgray** operator to your printer's gray-scale values.

Gamma correction is linked to print resolution. The main benefit of gamma correction is that it improves the print quality of a scanned image by improving halftones at a given resolution. To get the best gray-scale PostScript image at any resolution, gamma correction should be turned on.

You can set gamma correction through PS Exec or through the Administration/Engine/Gamma Correction menu.

Menu	Administration/Engine/Gamma Correction
Choices	On, Off
Default	Off
Notes	When gamma correction is set to "on," the gamma correction is automatically adjusted when printer resolution is changed. Gamma correction applies only to PostScript images. If turning on gamma correction doesn't yield a suitable gray-scale image for your needs, set a specific gamma correction value through your drawing application or through the PostScript **settransfer** operator. (See your drawing application documentation, the *QMS Crown Technical Reference Manual*, and the *PostScript Language Reference Manual* for more information.)

Memory

Memory allows your printer to store and retrieve information that's required to perform many of its tasks. The memory requirements of each printer are dictated by the applications to be run. Each printer comes standard with a certain amount of memory, but you may add more memory as necessary.

The memory is divided among users (or "clients"), each of which allocated a specific amount (or "block") of memory. Each memory client is dedicated to a specific printing and application purpose. Your QMS 1725E Print System allows you to distribute its memory among the various memory clients where it can best serve your specific printing needs. The following sections provide information on memory management so you can get the most from your printer.

Generally, there are two main reasons for wanting to reconfigure your printer's memory:

- To achieve maximum performance
- To enable additional features

The ability to configure your printer's memory doesn't necessarily mean that you must change your current configuration. If you're presently using all the features you need and the printer is performing efficiently, you shouldn't feel compelled to reconfigure your printer's memory. Just remember that if your printing needs change, not only do you have the ability to increase the amount of printer memory, but you also can redistribute it where you feel it would best meet your printing requirements.

QMS Memory Management

Managing the memory on your printer is much the same as managing your personal income. In money management, you have a certain amount of income and many ways of spending that income. You decide where that money goes according to what's important to you. There's no single correct way to manage money, but there is one best way for you according to your financial obligations.

The same is true for managing the memory on your printer. There's no single correct way for everyone to allocate available printer memory. There may be, however, a best way to configure your printer's memory for maximum efficiency in your specific printing environment. For example, if you use a large number of PostScript fonts of various point sizes, you may want to increase the amount of memory allocated to the area specified for PostScript fonts. Or you may want to increase memory to the area that minimizes slowdowns when collating large print jobs.

Memory configuration affects these things as well as the number of jobs that can be accepted by the printer, the number of options available simultaneously, the number of downloadable fonts and emulations that can be stored, and overall printer performance.

Memory Terms

Before you can configure your printer's memory efficiently, you must first understand the different types of memory and how they work together. Your QMS 1725E Print System documentation uses the following memory terms:

Memory

Memory allows your printer to store and retrieve information. It's the space within your printer where information is stored while being actively worked on.

Memory Client

A memory client is a function that has a dedicated block of memory. Each memory client controls certain features. When insufficient memory is allocated to a specific client, the features it controls may not be accessible.

Storage

Storage is a device which information can be kept. There are three main types of storage—ROM, RAM, and hard disks.

ROM (Read Only Memory)

ROM contains data and/or machine-executable instructions that can be read but not modified. On your QMS 1725E Print System, the operating system code, resident fonts, and resident emulations are stored in ROM. This information is not lost when the printer's power is turned off.

RAM (Random Access Memory)

RAM is the memory your printer uses to perform each task. It can be written to and read from. Once a task is complete, the memory is free again to be used for another file. This memory is volatile, so if your printer loses power while a file is being sent, the file must be resent. The number and type of features you can run on your printer simultaneously depend on the amount of RAM you have and how that RAM is distributed. Your printer comes with 8 MB of RAM, but it is upgradable to 64 MB by adding Single In-line Memory Modules (SIMMs).

RAM Disk

Also called a virtual disk, the RAM disk is an area of RAM that is used to simulate an additional hard disk. Data can be written and read more quickly than on a hard disk, but a RAM disk loses any information stored on it when the printer's power is turned off. The spooling buffer is a RAM disk client.

SCSI (Small Computer System Interface)

The printer's SCSI port (located on the interface panel on the back of the printer) allows you to connect up to three optional SCSI hard disks, (four if there's no internal hard disk installed), providing storage for fonts, emulations, and other files. Hard disks are also used to increase collation capacity and provide a secondary storage area for spooled data, while providing virtual memory capabilities.

Volatile Memory

This type of memory is cleared when the printer is turned off. For example, most RAM is volatile.

NV RAM

Non-volatile is a protected form of RAM used to store information such as your printer's configuration menu. Because its non-volatile, configuration options you have chosen, such as emulations, memory settings, and input bins, are not lost when you turn off your printer.

Physical Memory

Physical memory refers to the amount of RAM installed in the printer.

Virtual Memory

Virtual memory extends the effective size of the printer's memory by using a disk file or swap file to simulate additional memory space. It enables the hard disk to accept data swapped from RAM to free temporarily the RAM for other tasks.

Flash ROM

Quick loading, reprogrammable memory that holds information even when the printer is turned off is known as flash ROM. Your QMS 1725E Print System has flash ROM available to hold system code and future system upgrades. The chief advantage of flash ROM is that system upgrades can be loaded from a floppy disk without the necessity of swapping out expensive EPROMS or having to place a service call.

Spool

Spooling is temporary storage to hold print jobs until the printer is available to process them.

Evaluation of Your Printing Environment

The first step in allocating your printer's memory is to define your printing needs. Each of your printer's features requires a minimum amount of memory. If you use a feature, you must allocate enough memory to the client that controls it. On the other hand, if there are features you don't use, you can take the memory in the clients that

control the unused features and assign it to other clients that need additional memory.

Evaluation Questions

To get a better idea of what your printing requirements and your printer's capabilities are, answer the following questions:

1 How much RAM does your printer have (standard and additional memory)?

2 Do you have the option of installing additional memory if it's needed?

3 Does your printer have any external hard disks connected? If so, how many and what size?

4 Which resident emulations will you be running?

5 Will you be loading any non-resident emulations? If so, how many and which ones?

6 How many printer ports will be connected?

7 Do you have an optional LocalTalk interface connected?

8 How many people will be using this printer simultaneously?

9 How many downloadable fonts will you be using? What sizes? From which emulation?

10 Will you use many different sizes of fonts/typefaces?

11 How large are the files you typically print? How large is the largest file you'll be printing?

12 Are most of your files text, or are any graphics intensive?

13 Will you want to download fonts, forms, or operators to memory?

14 Will you be collating documents? If so, how large and complex will these documents be?

15 What media sizes will you be using?

16 Will you be printing at 300x300 dpi or 600x600 dpi?

After you have answered all of these questions, read the following sections to find out which memory clients control features you plan to use and which memory clients control features you don't need.

Memory Clients

Memory clients are users of printer memory that are dedicated to a specific purpose. Each of the memory clients is located in the printer's Administration/Memory menu. When you allocate memory to a specific client through the control panel, it's allocated in kilobytes (KB). Each time you make changes in the Administration/Memory menu, print a status page to confirm the memory reallocation.

» *Note: The value for each memory client must be divisible by 4 KB. Therefore, if a value is entered that is not evenly divisible by 4 KB, it's automatically converted to the next lower value that's divisible by 4 KB. For example, if you enter 102 KB, the actual value is lowered to 100 KB, assuming there is enough memory available to allocate to this client. See the "Memory" section of chapter 4, "Printer Configuration," for each memory client's minimum and default settings.*

Frame Buffer

The Frame Buffer memory client holds rasterized or bitmapped images of page faces which are ready to be sent to the print engine. A frame holds the contents of each single page image.

Because the frame buffer memory is so critical to the actual printing of a page, its allocation takes precedence over that of other memory clients. The number of frames needed to print is engine speed specific and depends on the media size and resolution. For example, printing at 600x600 dpi requires four times the amount of memory in the frame buffer than does 300x300 dpi.

The Administration/Memory/Frame Buffer menu provides a quick and simple method of defining how much memory should go to each of the clients for the most complicated printing conditions in your environment. Menu options allow you to specify the largest media size you plan to use for each resolution. Memory is then automatically allocated to the clients that require it.

» Note: The printer does not allow you to choose features that do not work with the amount of memory currently installed.

Using this option does not change the media size. It just ensures that you have enough memory allocated to the appropriate clients to print on the requested media size.

Menu	Administration/Memory/Frame Buffer/300 dpi
Choices	Letter/A4,legal
Default	Letter/A4

Menu	Administration/Memory/Frame Buffer/600 dpi
Choices	Letter/A4, legal
Default	Letter/A4

The following table lists, for your information, the minimum number of KB that must be devoted to the frame buffer for all media size and resolution combinations.

Media Size	**Minimum Frame Buffer Size (in KB)**	
	300x300 dpi	**600x600 dpi**
A4	996	3960
Executive	776	3100
Legal	1236	4936
Letter	960	3832

Display List

Also known as K Mem Display, this client stores compressed representations, or blocks, of the pages to be printed. It takes approximately one compressed block for a normal 8.5" x 11" (215.9 mm x 279.4 mm) text page, four compressed blocks for an 8.5" x 11" (215.9 mm x 279.4 mm) page that includes some graphics, and as many as 500 compressed blocks for an extremely complex page.

Many pages of compressed blocks belonging to multiple print jobs can be stored at the same time in the display list. If enough memory is allocated to this memory client, a page can always be ready to print as soon as another page has been imaged to the print engine.

The amount of memory required for each compressed block is printer specific. The QMS 1725E Print System takes approximately 32 KB of memory from the display list for each compressed block. However, if a page includes raster image data (for example, TIFF or bitmap data), each compressed block requires much more memory.

Increasing the amount of memory in this client may improve printing throughput and minimize slowdowns due to collating or printing complex pages. If not enough memory is allocated to this client, memory is taken from the excess memory client to complete a print job.

PostScript Font Cache

Also known as K Mem PS Fonts and Font Cache, this memory client stores bitmapped representations of previously scaled PostScript fonts. This process reduces the number of times a font must be converted from outline form to bitmap form. Printing pages that have characters already stored in the font cache is much faster than printing characters not yet in the font cache.

As the font cache memory fills, the printer makes room for new bitmapped characters by erasing those that have been in the cache longest without being used. By increasing the memory allocated to this client, the printer can store more characters and spend less time erasing and replacing characters in the cache. This client has a limit to the maximum point size it will store.

Normally, you don't need to change this memory client unless you use a large number of fonts at various point sizes. If you do, you may allocate additional memory to this client to improve printer performance. There's no specific formula to use in figuring the amount of memory required by the font cache, but after a certain point, large font caches cause the printer to take longer to print than smaller font caches because of the search time through the cache. The recommended font cache size is in the following ranges:

- 128-256 KB for 300x300 dpi printing
- 256-512 KB for 600x600 dpi printing

You should experiment to see what font cache size works best for you.

PS Heap

Also known as K Mem PSHeap, Heap, PostScript VM, and Virtual Memory, this client holds downloaded fonts, PostScript operators, and forms.

Inefficiently coded PostScript jobs can consume an extremely large amount of virtual memory or leave objects in the PostScript heap after the print jobs are completed, leading to virtual memory errors. If not enough memory is allocated to the PS heap, the job cannot print.

Increasing the memory allocated to this client allows more complex jobs to print and increases the number of fonts that can be downloaded to virtual memory. However, this client should be increased only if you receive a virtual memory error when attempting to print a job or download a font, and even then it should be increased only in small increments until the error message goes away. Excess memory in the PS heap is not used.

Emulation

Also known as K Mem Emulation, this client is used to store any optional or loadable emulations, such as LN03 Plus or QUIC II. Increasing this client's memory allows you to load more than one optional emulation so that it doesn't have to be reloaded every time the print job is sent.

If an emulation is loaded to process a print job and there is not enough memory in the emulation client, another emulation already loaded may be unloaded automatically to obtain enough memory. If you notice a delay in printing between jobs that have different non-resident emulations, it's possible that the emulations are having to reload each time they're run. Adding to the emulation client may eliminate the unloading and reloading of these emulations and, consequently, increase throughput.

Also increase the emulation client if you're printing complex non-PostScript jobs that may require more memory to process correctly.

Temporary Emulation

Also known as K Mem Emul Tmp and Emulation Temporary, this client sets the amount of system memory to be used by non-PostScript emulations for storing downloaded fonts, forms, and macros. By dedicating a portion of memory to this client, your printer can perform "context switching," the ability to retain downloaded fonts and forms even after the printer changes from one emulation to another. Context switching prevents unnecessary repetitive downloading and traffic congestion on networks.

Normally, this memory client doesn't need to be changed unless you plan to download many different non-PostScript fonts.

Spool Buffers

Also known as Host Input and K Mem for Spool, this memory client stores incoming data from all the interfaces until the emulation can process the print job. When enough memory is allocated to this client, the host becomes free more quickly, and the number of jobs that the printer can accept simultaneously is increased. You should consider the amount of data being sent simultaneously when allocating memory to the spool buffer. If available, a hard disk can supplement this client with additional memory needed for spooling. See "Hard Disk Management" later in this section.

» *Note: While increasing this client is beneficial in reducing network traffic, throughput is not necessarily increased. In addition, making this client too large could actually decrease throughput because of the overhead involved with managing a large spool.*

Disk Cache

This memory client stores frequently used data in system memory instead of continually storing and retrieving it from a hard disk. If a hard disk is used and a lot of disk access is required, adding memory to the disk cache may increase the printer's performance. For example, if many fonts are stored on disk, faster access to these fonts is achieved by increasing the disk cache size. Conversely, if no hard disk is used, the disk cache should be set to 36 KB until a hard disk is

installed. However, when one or more hard disks are installed, they are not available until the disk cache client is increased.

The amount of memory needed for the disk cache client is dependent on the size of the disk, the number of disks, the number of subdirectories on each disk, and the amount of memory dedicated to caching. As long as the disk cache is enabled and there is enough memory in the disk cache, all disks are accessible. If insufficient memory is allocated to the disk cache, some disks may be seen while others are not.

The Disk Cache memory is also used when the Intellifont SIMM option is installed in your printer. To have access to the fonts stored on the Intellifont SIMM, Disk Cache must be set to a minimum of 48 KB. If your printer has 12 MB of RAM, you will need to change the Disk Cache setting from 36 to 48 KB, (See the Memory section of chapter 4, “Printer Configuration,” for instructions on setting the Disk Cache client). If your printer has more than 12 MB of RAM, the Disk Cache setting will automatically be set to the required amount for the Intellifont SIMM to operate properly.

The disk cache is a high speed temporary buffer for data going to and from the hard disk. It can speed the printer in two ways:

- Information such as frequently referenced fonts and logos may still be in the cache and may not have to be pulled off a hard disk each time they’re needed.
- Information being written to a hard disk can be held in the cache temporarily until a more convenient time to be written to disk.

The recommended amount of memory for the disk cache client is as follows:

- 20 KB internal usage
- 0.5 KB per MB of disk storage total for all disks
- 100 KB of memory dedicated to caching

For example, the recommended amount of memory for the disk cache for a single 120 MB hard disk would be 180 KB, and for two 120 MB hard disks it would be 240 KB.

» Note: After you format a hard disk and the FORMAT COMPLETE message is displayed in the message window, the formatted disk may not be available to the system until the printer is turned off and then on again.

MB Printer Mem

This field shows the size of the physical RAM installed in the printer. If a hard disk is installed and disk swapping is enabled (Administration/Memory/Enable Disk Swap), this field also gives the size of available virtual memory.

System Memory

Also known as System Use, this non-configurable client is the amount of RAM used to run the printer's operating system. It's never increased or decreased. The system memory subtracted from the total amount of RAM identifies the amount of RAM available for all the other memory clients.

Hard Disk Management

You can add one internal hard disk and up to three external hard disks to your QMS 1725E Print System. These hard disks serve as secondary storage places for such items as downloaded fonts, emulations, and spooled data.

Virtual Memory Support

Your printer supports virtual memory capabilities for the spooling buffer (Administration/Memory/K Mem for Spool menu) and the display list (Administration/Memory/K Mem Display) clients when a hard disk is installed and disk swapping is enabled (Administration/Memory/Enable Disk Swap menu). These capabilities extend the amount of memory available for certain supported features, such as spooling and collation. If all of the memory in the spooling buffer or display list is being used and Enable Disk Swap is enabled, the printer stores the "overflow" on a hard disk.

» Note: Chunk collation begins automatically after 50 pages regardless of how much memory is available to the display list client.

End Job Mode

When sending print jobs through the serial and parallel protocols, some applications and their printer drivers append an end-of-document command (EOD) to each print job to ensure that each file prints correctly. The reason for this is that some protocols and print queuing systems send print jobs to the printer as one continuous data stream (one print job immediately following another).

However, some applications are limited in printer language and are unable to produce an EOD command. The lack of an EOD command can cause some print jobs to be “run” together. The ESP technology (capable of receiving print jobs from all supported emulations simultaneously) incorporated in your QMS 1725E Print System examines the first part of each print job to determine its emulation. Once the emulation is identified, the print job processes without checking for any changes in emulation until an EOD is received. This minimizes any slowdown during the sensing process. To help ESP technology determine the proper emulation of successive print jobs, the printer must be able to identify the end of job for each job.

Therefore, unless a wait timeout (the amount of time the printer is waiting on data from the host) occurs and ends each print job, or unless you add an EOD command between each file being printed through these protocols, some print jobs may be interpreted by the printer as one job with the same emulation. See chapter 4,”Printer Configuration,” for more information on emulation timeout.

When printing multiple jobs with little or no time delay and with no EOD command between each job, the serial and parallel protocols may be unable to detect an end of job automatically. So the End Job Mode feature on QMS Crown printers was designed to allow you to set the end of document for print jobs being sent through these protocols.

Common Reasons to Use End Job Mode

If you are printing via the serial and parallel protocols, and one of the following conditions exists, you may need to set the end job mode:

- Multiple print jobs with little or no time delay and with no EOD commands have been sent to the printer and the message window displays only one active job.
- Multiple print jobs of the same printer language have been sent to the printer and they print on the same page. (For example, you send the AUTOEXEC.BAT file with no EOD command followed with little or no time delay by the CONFIG.SYS file, and they both print on the same page.)
- Multiple print jobs of different printer languages "run" together as if they are a single print job. (For example, you send a PCL print job followed by a PostScript print job, and the PCL job prints and is followed by what appears to be program code instead of your PostScript print job.)
- You want to print multiple jobs with header pages.
- You want to print multiple jobs where job separation is important.

When your printer is in ESP mode, printing multiple jobs through the serial and parallel protocols and end job mode is not set, ESP technology interprets the emulation for only the first job. The print jobs that follow are interpreted as being the same emulation as the first job. For example, if there are two print jobs, the first a PCL file with no EOD command, and the second a PostScript file with a Ctrl-D (a PostScript end-of-file character)—ESP technology interprets the emulation of the first job correctly. But since the first print job has no EOD command, it "runs" into the second job, and even though the second job is PostScript, it prints in PCL.

Using the EOD Commands

Since the serial and parallel protocols may not be able to detect an EOD automatically, due to a lack of an EOD command in some printer languages, you can insert an EOD command at the end of your file to tell the printer where your print job ends. QMS Crown printers recognize two end-of-document commands: QMS EOD and HP EOD.

These commands are functionally the same. They enable data stream sensing for the EOD command, allowing your host computer to control print job separation. The QMS EOD and the HP EOD

commands perform an end of document for all of the printer emulations supported on your printer (PostScript, HP-GL, HP PCL, and Lineprinter).

See your system administrator or applications development department to have them identify the standard EOD command for your organization, or to have them select a standard EOD command.

Setting the End Job Mode for the Serial and Parallel Protocols

Your printer can be connected through the serial or parallel interface to a stand-alone PC, to a PC print server, or to some other type of print queuing system. This section provides a quick guide to the steps needed to set the end job mode for each environment. The following sections provide more detailed information for each step.

Stand-Alone PC

1 **Set the end job mode from the printer's control panel.**

2 **Add the EOD command to your file.**

» Note: If using steps 1 and 2 is not feasible in your stand-alone PC environment, you can alternatively use a program that either causes an emulation timeout or that inserts an EOD command between each print job. See your QMS vendor for more information on this type of program.

PC Print Server

1 **Set the end job mode from the printer's control panel.**

2 **Create a job separator to append an EOD command and send it between each print job.**

Other Print Queuing Systems

If you use a print queuing system other than a PC print server and you experience what appears to be an EOD command problem, you may need to use another procedure, such as a print utility, an initialization sequence, or a header page to add an EOD command. See

your print queuing system documentation, your network administrator, or your QMS vendor for more information.

Setting the End Job Mode via the Control Panel

Use the following procedure to set the end job mode from the printer's control panel for printers connected via the serial or parallel interface to a stand-alone PC, a PC print server, or some other type of print queuing system:

» Note: If you print both serial and parallel protocol jobs, then you must set the end job mode for each protocol.

Wait for the printer to go idle, and then press the control panel keys in the order shown in the following instructions to access the End Job Mode option. The printer responds by displaying a status message in the message window.

» Note: You may need to press the Next key one or more times to advance through the list of selections or options.

Key	Purpose	Message Window
Online/ Offline	Turns off the Online/Offline indicator and readies the printer for configuration.	IDLE
Menu	Accesses the configuration menu.	CONFIGURATION OPERATOR CONTROL
Next	Advances to the Operator Control/ Administration menu.	CONFIGURATION ADMINISTRATION
Select	Accesses the Administration menu	ADMINISTRATION COMMUNICATIONS
Next	Advances to the Communications/Parallel (or Serial) menu.	COMMUNICATIONS PARALLEL (*or* SERIAL)
Select	Accesses the Parallel (or Serial) menu.	PARALLEL/SERIAL MODE
Next	Advances to the Parallel (or Serial)/End Job Mode menu.	PARALLEL/SERIAL END JOB MODE
Select	Accesses the End Job Mode menu.	END JOB MODE *OPTION*

Next	Advances to the appropriate option (QMS EOD, HP EOD, or None).	`END JOB MODE` *`OPTION`*
Select	Selects the option.	*`OPTION`* `IS SELECTED`
	Returns to the Parallel (or Serial)/End Job Mode menu.	`PARALLEL/SERIAL` `END JOB MODE`
Online/ Offline	Asks you if you want to save your change.	`SAVE CHANGES?` `NO`
Next	Advances to the Yes option.	`SAVE CHANGES?` `YES`
Select	Saves your change and idles the printer.	`IDLE`
Online/ Offline	Puts the printer back on line.	`IDLE`

Adding an EOD Command to Your File

When adding an EOD command to your file, use the syntax for the selected EOD command exactly as written (the command's syntax is case sensitive).

» Note: <ESC> represents the escape character. (The decimal value for the escape character is 027, and the hexadecimal value is 1B.) How you enter the escape character depends on your application. Some applications allow you to press and hold the ALT key and then type 027 to enter the escape character, while others allow you to type certain character sequences to represent the escape character. See your computer or application documentation to find out how to enter the escape character on your system.

For this EOD command...	Use this syntax...
QMS EOD	%%EndOfDocument <CR><LF>
HP EOD	<ESC>%-12345X

» Note: The <CR><LF> sequence following the %%EndOfDocument line for the QMS EOD is necessary to avoid an INPUT IDLE message remaining in the printer message window after the document finishes printing.

When the QMS EOD or the HP EOD is set, the printer does not recognize the Ctrl-D EOD command. Add your organization's standard EOD command to the end of your print file, or add it to a separate file.

Adding an EOD Command to the End of Your File

Create an output file (for example, print an ASCII, PCL, or PostScript file to disk) and add your organization's standard EOD command (QMS EOD or HP EOD) to the end of that file.

Sample output file:

```
Text
Text
Text
Text
%%EndOfDocument
```

Adding an EOD Command to a Separate File

Create an ASCII text file that contains only the EOD command. For example, create a DOS batch file listing each print filename followed by the EOD command filename for each file being printed. Then “run” the batch file to print your list of files.

Sample DOS batch file:

Command	Explanation
`Print mktg.doc`	Job filename
`Print end.txt`	EOD command filename
`Print acct.doc`	Job filename
`Print end.txt`	EOD command filename

Creating a Network Job Separator

If your printer is connected to a network through a PC and the PC is acting as a print server managing the printing of shared network files, then your system administrator must create a job separator and associate it with a print job queue. Different network environments have different procedures for creating the job separator, such as initialization sequences, custom banner pages, print job headers, or print job

trailers. The print server does not necessarily send multiple print jobs to the printer in the order that you queued them to the printer. The network job separator is accessed with each print job, so this ensures that network job separation is enforced. See *QMS Crown Network Notes* for more information on how to create a network job separator for several commonly used networks.

Parallel Interface Modes

In addition to the Centronics parallel interface, your printer provides IEEE1284 bidirectional parallel interface, which supports five modes of operation. Although the printer automatically recognizes and uses the mode dictated by the host, the modes can be set manually through the printer control panel. See chapter 4, “Printer Configuration,” for information on manually selecting modes through the control panel.

Byte Mode

Printer-host parallel communication is done in bytes.The byte mode may be used by the host device in a DMA (Direct Memory Access) mode for more efficient operation.

When byte transfer is complete and there is no more data to transmit, the host may do one of the following:

- Terminate and return to the compatibility mode.
- Stay in the Host Busy, Data Not Available phase.
- Set Host Busy Low, putting the interface into the idle phase.

If there is additional data, the host may do one of the following:

- Set Host Busy Low, indicating that the host can accept additional data.
- Stay in the Host Busy, Data Not Available phase.
- Terminate and return to the compatibility mode.

Check your host documentation to see if the host is 1284 compatible.

Compatibility Mode

Printer-host parallel communication is done in a manner that ensures compatibility.

ECP (Enhanced Compatibility Port) Mode

This is an advanced version of byte mode which allows transfer of data in either direction without returning to the compatibility mode. The parallel communication is a half-duplex channel with either device, the host or the printer, making a request for data transfer when there is available data. In the case of simultaneous requests for transfer, the printer always defers to the host.

EPP (Enhanced Parallel Port) Mode

Printer-host parallel communication is done via asynchronous bidirectional eight-bit transfer. A return to compatibility mode is not required.

Nibble Mode

Printer-host parallel communication is done in nibbles (four bits; one-half byte) with the low order nibble sent first. A transfer of two nibbles is required for each byte of information.

PS Protocol Option

Your QMS 1725E Print System supports PS Protocol, a new protocol for communication between the printer and a host computer over the serial, parallel, and optional interfaces. This binary communications protocol (BCP) allows any 8-bit binary value (0-255) to be treated as data, while allowing a few of the values to function as special control characters. When communicating 8-bit binary data in binary or binary fixed mode, the printer uses the quoting mechanism of the binary

communications protocol to distinguish between the special control characters and print job binary data.

To differentiate data from the special control characters, any data that is the same as one of the following special control characters must be quoted.

ASCII Keyboard	ASCII Name	ASCII Hex	Control Function
^A	SOH	0x01	Quote data character
^C	ETX	0x03	Abort job and flush to end of file
^D	EOT	0x04	End-of-file marker
^E	ENQ	0x05	(Reserved for future use)
^Q	DC1	0x11	XON in XON/XOFF flow control
^S	DC3	0x13	XOFF in XON/XOFF flow control
T	DC4	0x14	Job status request
^\	FS	0x1C	(Reserved for future use)

A data byte is quoted by replacing it with a two-character sequence. The first character is a ^A (ASCII hex 0x01), and the second character is the character itself XORed with the ASCII value 0x40. For example, to send the value 0x14(^T) as data, send the two-character sequence 0x01 0x54 (^a T) instead. (ASCII “T” is the result of XORing ^T with 0x40).

This method of quoting guarantees that whenever the printer receives any of the eight control characters, the control function is intended regardless of whether the preceding character is a ^A. Any data byte not equal to one of the eight special control characters is transmitted by sending the data byte.

For more information on BCP and quoting, see the *PostScript Language Reference Manual* (Adobe Systems, Inc., Reading, MA: Addison-Wesley, 1990, ISBN 0-201-18127-4), the “Adobe Serial and Parallel Communications Protocols Specification” (in *Adobe Developer Support.* Adobe Systems, Inc., February 14, 1992), and the “PostScript Language Reference Manual” (in *Supplement for Version 2011*, Adobe Systems, Inc., January 24, 1992).

Options

The following options are available in the PS Protocol menu.

Menu	Administration/Communications/*Interface*/PS Protocol	
Choices	Normal—Enables standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators.)	Parallel, serial, Ethernet, and optional interfaces
	Normal Fixed—Enables standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators.)	Parallel, serial, Ethernet, and optional interfaces
	Binary—Enables binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints)	Parallel, serial, Ethernet, and optional interfaces
	Binary Fixed—Enables binary communications protocol. Print jobs can not alter this value through PostScript operators. Data in the printable ASCII range also prints.)	Parallel, serial, Ethernet, and optional interfaces
	QBinary—Enables binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism for the special characters and ^D (EOF).	Optional interfaces only
	QBinary Fixed—Enables binary communications protocol. Print jobs cannot alter this value through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism for the special characters and ^D (EOF).	Optional interfaces only
Default	Normal	
Notes	A data stream sent through the serial or parallel interface using Binary is treated the same as a data stream sent through an optional network interface using Quoted Binary. However, a data stream sent through an optional network interface using Quoted Binary is not treated the same as a data stream sent through the same interface using Binary.	

Advantages

The main advantage of using the Binary and Fixed Binary PS protocol modes when sending binary data is that these modes compress the data stream allowing your documents to be smaller so you can send smaller jobs to the printer. For example, some device drivers can format bit map images as binary data instead of as ASCII hex data.

Implementation

To implement PS protocol for sending binary data on your system you need a device driver available with some applications or operating systems, or you can alternatively use a program to read the data and write out the quoted characters. See your QMS vendor for any available information on device drivers or binary filter programs.

HP-GL Color Encoding

The term “pen” in the HP-GL emulation refers to a logical pen (in other words, the current pen position) rather than to a physical pen on a plotter. A pen and a pen color are selected to draw images. This emulation supports 8 pens and pen colors.

Since your QMS 1725E Print System is a monochrome (black and white) printer, the pen colors are converted to shades of gray. The default color mappings for the 8 pens are as follows:

Pen	Pen Color	Level of Gray
1	Black	100%
2	Black	100%
3	Red	70%
4	Green	41%
5	Blue	89%
6	Violet	59%
7	Orange	25.8%
8	Brown	50%

» Note: The default color for both pen 1 and pen 2 is black. However, the pen width for these two pens is different. Pen 1 is 0.7 mm and pen 2, like the other six pens, is 0.3 mm.

The printer maps each pen to its assigned color, then converts the color to a grayscale using the National Television System Committee (NTSC) standard equation for encoding color. This equation converts a given set of CMYK values to grayscale. For the 8 pen colors assigned to pens 1 - 8, the printer uses the designated grayscale; for any other pen color, the printer uses the following equation:

$$[(C*0.3) + (M*0.59) + (Y*0.11) + K] \div 255$$

» Note: This equation assumes that each grayscale is a byte value that ranges from 0 to 255 (100%). If the sum of the left-side (calculation in brackets) of the NTSC equation is greater than 255, then the sum is set equal to 255.

Example

Any color can be reproduced by using some combination of CMYK. If you have defined the following CMYK values for the color brown in your application, the NTSC equation that follows shows you how the percentage of grayscale for the color is derived.

CMYK Value
C (96)
M (128)
Y (224)
K (0)

$$[(96*0.3) + (128*0.59) + (224*0.11) + 0] \div 255 = [(28.80) + (75.52) + (24.64) + 0] \div 255 = 50\%$$

❖

6

Printer Options

In This Chapter . . .

- Envelope feeder
- Duplexer assembly
- Font and security cards
- Downloadable emulations and print system software
- Single in-line memory and font modules (SIMMs)
- Installing optional interfaces
- Using a LocalTalk interface
- Internal and external hard disks

Introduction

The QMS 1725E Print System has many options which expand its capabilities. The following are available for purchase from your QMS vendor:

- Paper cassettes in A4, letter, legal, and executive size
- High capacity feeder(1500-sheet capacity)
- Automatic envelope feeder (100-sheet capacity)
- Duplexer assembly
- Font and emulation cards
- Security card
- Memory upgrades (RAM expansions)
- Intellifont SIMM
- Optional network interfaces
- Optional LocalTalk interface
- Internal hard disk drives
- External hard disk drives
- Storage options
- Kanji fonts disk

If your vendor cannot offer optional accessories for your printer, please see appendix A, “QMS Customer Support.”

Additional Paper Cassettes

Additional paper cassettes let you switch paper size, color, and type without having to unload and load paper into the cassette. Keep replacement cassettes close by, and you can easily change paper by slipping one cassette out and another in. Each cassette has a capacity of 500 sheets.

The Envelope Feeder

With the optional envelope feeder, you can print up to 100 business or personal-size envelopes at a time. This tray lets you print mailing addresses on envelopes pre-printed with logos or addresses. It even allows you to print your own logo and return address, along with the mailing addresses.

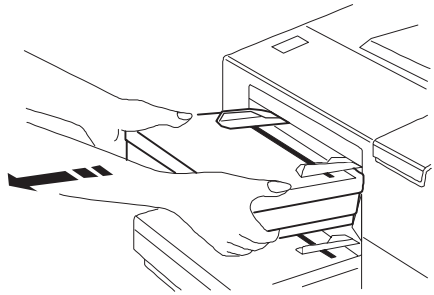
Selecting Envelopes

Envelopes must meet the specifications listed in appendix B, "Technical Specifications." They should be the top-flap type with pre-folded sealing flaps. The leading edge (the edge that feeds into the printer) must be thin and well creased. End-flap envelopes, envelopes with transparent windows, and envelopes with three or more layers on the left and right edges are not recommended.

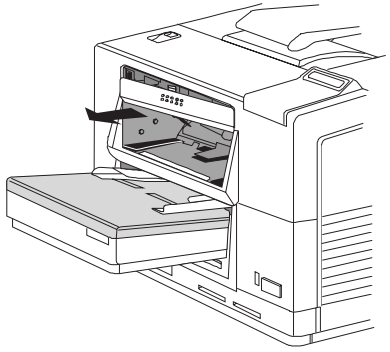
Installing the Envelope Feeder

Envelopes must be properly loaded for the envelope feeder to function correctly.

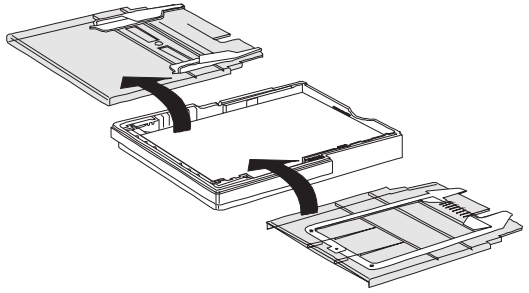
1 Turn the printer power switches off and remove the upper paper cassette.



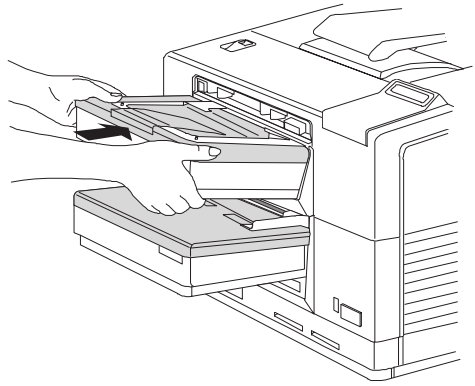
2 Remove the envelope feeder slot-cover located above the upper paper cassette slot by pushing it in and then down.



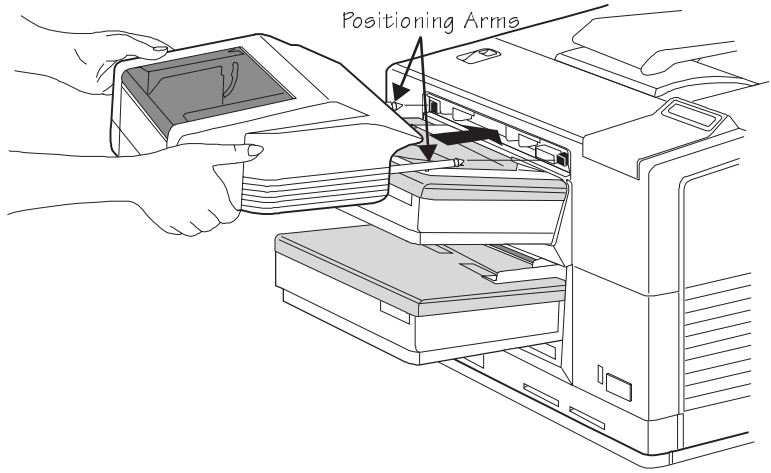
3 Replace the cover of the upper cassette with the special paper cassette cover.



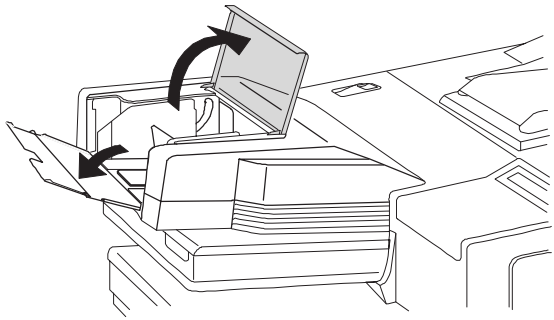
4 Reinstall the upper paper cassette in the printer.



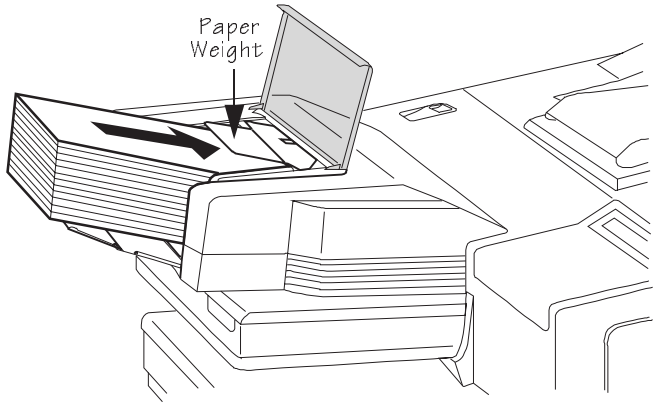
5 Take the envelope feeder in both hands, line up the positioning arms with the openings in the printer and insert the envelope feeder as far as it goes.



6 **Open the envelope feeder cover and the envelope extension tray as shown.**



7 **Lift the paper weight up and insert the envelopes in the feeder as far as they will go before meeting resistance.**



8 **Adjust the envelope feed guides located on both sides of the envelopes to match the size of the envelopes.**

» Note: Arrange the envelopes so that they press lightly against the envelope feed guides. Do not adjust the guides too tightly; otherwise, a jam may occur.

9 **Close the envelope feeder cover.**

10 **Turn the printer power switches back on.**

11 Configure your printer for envelope printing through the control panel.

a Use the Manual Feed Size option (Operator Control/Manual Feed Size) to select the envelope size.

b Select the output bin (Operator Control/Outputbin).

See chapter 4, “Printer Configuration,” in this guide for control panel instructions.

Duplexer Assembly

The optional duplexing unit allows you to print on both sides of a sheet of paper using either manual feed or automatic feed from a paper cassette. Additional memory is required for duplexing at 600 dpi resolution. The following chart represents the minimum amount of memory needed to print various paper sizes at 300 or 600 dpi resolution. In most cases, the minimum amount of memory does not allow the printer to run at rated speed. The amounts shown assume the Page Recovery function (Administration/Engine/Page Recovery) is turned on.

	300 dpi		600 dpi	
Paper Size	Simplex	Duplex	Simplex	Duplex
Letter	8MB	8MB	8MB	12MB
Legal	8MB	8MB	12MB	16MB
A4	8MB	8MB	8MB	12MB
Executive	8MB	8MB	8MB	12MB

Installing the Duplexer Assembly

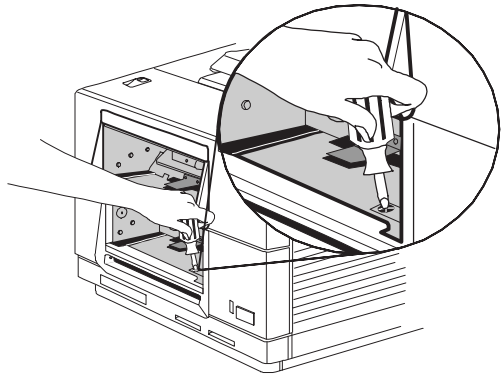
Do not attempt to use the duplexer for envelopes, labels, or transparencies. A Phillips screwdriver is needed for this procedure. To install the duplexer assembly

1 **Turn both power switches off and unplug the power cord.**

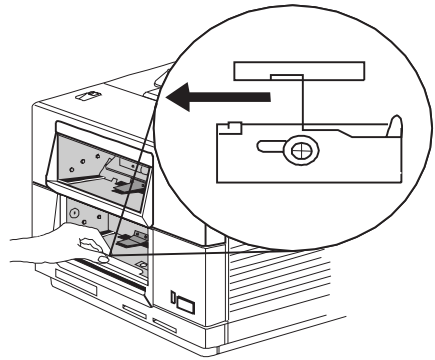
2 **Remove the upper and lower paper cassettes from the printer.**

3 **Loosen the screw on the metal plate in the lower paper cassette slot with a Phillips screwdriver.**

Be careful not to drop the screw inside the printer.

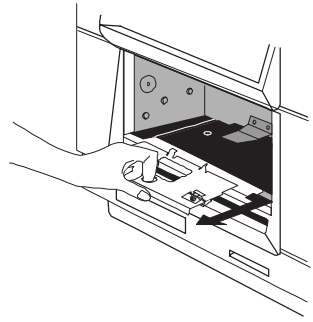


4 **Insert a finger or a screwdriver in the hole and slide the catch to the left as far as it goes while lifting the plate upward.**

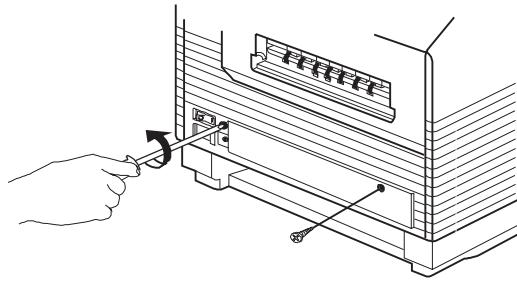


5 Pull the plate to the right and toward you to remove it from the slot.

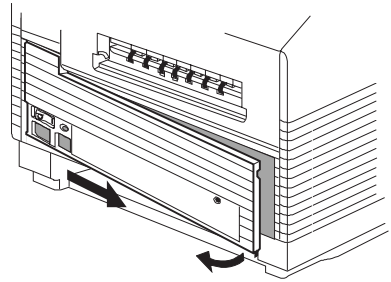
Store the plate in a safe place in case you remove the duplexer from the printer. If you do remove the duplexer, this plate should be reinstalled to ensure that the printer operates properly.



6 Remove the two screws on the duplexing unit slot-cover.

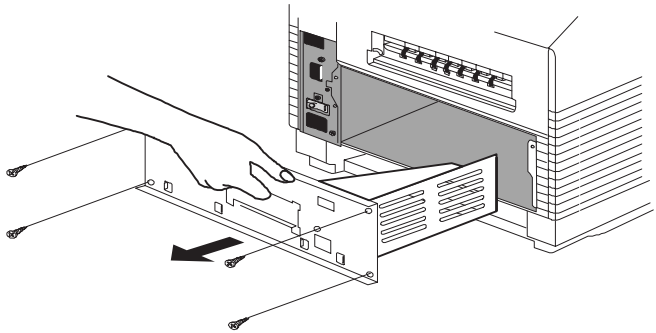


7 Push in a little on the right edge of the duplexing unit slot-cover to unlock it. Then, slide the cover off to the right.

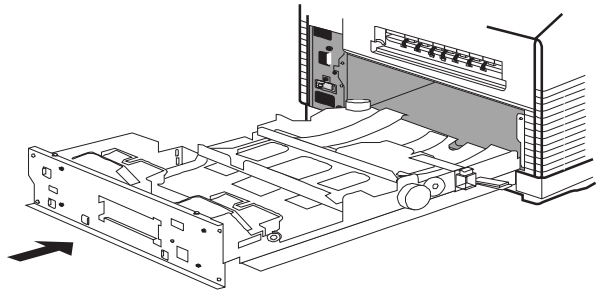


8 Remove the four screws holding the inner cabinet in place, and pull out the inner cabinet.

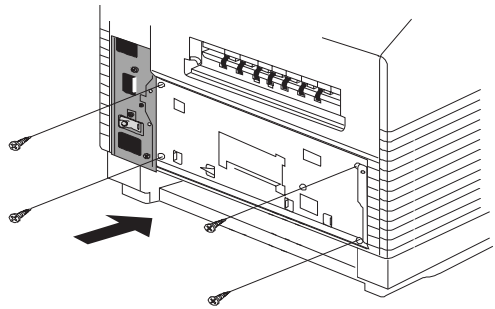
Store the inner cabinet in a safe place in case you ever remove the duplexing unit from the printer. If you do remove the duplexing unit from the printer, you must reinstall the inner cabinet.



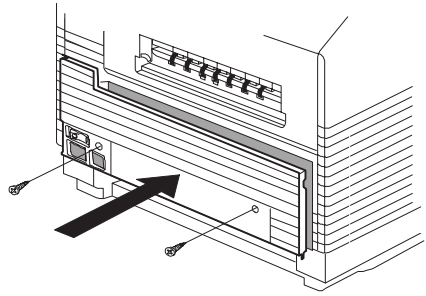
9 Insert the duplexing unit into the printer as shown.



10 Replace the four screws that were removed in step 8.



11 **Replace the duplexing slot-cover, and reinstall the two screws that were holding it in place.**



12 **Replace the paper cassettes.**

13 **Plug in the power cord, turn both power switches on, and check the control panel to make sure the printer is ready to print.**

The message window should read IDLE.

Font and Emulation Cards

The two slots on the front, right side of the printer, below the bottom paper tray, may be used to expand the font and/or emulation capabilities of your printer. Both slots accept optional font, emulation, and security cards. Optional emulations may require additional RAM to operate properly. Contact your QMS vendor for font and emulation availability for your printer.

Caution: Your printer supports only QMS PCMCIA cards. These cards are not backward compatible with previously released QMS printers, and cards for previous printers are not compatible with your printer.

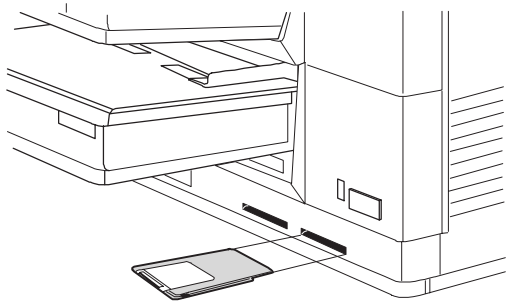
The printer supports up to two cards at once. Follow these steps to install a card:

1 **If you are using an HP ProCollection font card, turn off the printer.**

Otherwise, press the Online/Offline key to take the printer off line. The indicator light should be off.

Caution: The printer must be off line (the Online/Offline indicator should be off) before you insert or remove cards. Press the Online/Offline key to turn the indicator off. If you forget to take the printer off line before inserting or removing a card, turn the printer power off and back on to regain access to the printer's resident fonts and data stored in the printer's memory.

2 **To insert a font or emulation card, slide it into either slot with the label side facing up.**



3 **Put the printer back on line.**

To remove a card

1 **If you are using an HP ProCollection font card, turn off the printer.**

Otherwise, press the Online/Offline key to take the printer off line. The indicator light should be off.

2 **Pull the card out gently.**

3 **Put the printer back on line.**

» Note: If you are using an application, make sure the printer driver installed supports the fonts in the card. If not, contact your application manufacturer for support.

To download an emulation to a hard disk, refer to “Installing an Optional Emulation” later in this chapter. To download HP PCL fonts to the hard disk, refer to the *QMS Crown Document Option Commands* manual.

Security Card

A security card is available to set passwords for the Operator Control and the Administration menus. When a security card is installed, the Installation menu appears in the printer's menu structure.

Caution: The printer must be off line (the Online/Offline indicator should be off) before you insert or remove cards. Press the Online/Offline key to turn the indicator off. If you forget to take the printer off line before inserting or removing a card, turn the printer power off and back on to regain access to the data stored in the printer's memory.

The security card uses the same card slots as the font and emulation cards. The card slots are located on the front, right side of the printer, below the bottom paper tray. To install a security card, use the following procedure:

1 **Make sure the printer is off line.**

The Online/Offline indicator light should be off.

2 **To insert a security card, slide it into either slot with the label side facing up.**

3 **Press the Menu key.**

4 **Press the Next key until the message window displays**

```
CONFIGURATION

INSTALLATION
```

5 **Press the Select key.**

6 **Press the Next key to view the following options: Operator Passwrd, Use Operator Pwd, Admin Password, and Use Admin Pwd.**

7 **To protect the Operation menu, use the Operator Passwrd option to select the password and then Use Operator Pwd to turn on this option.**

8 **To protect the Administration menu, use the Admin Password option to select the password and then Use Admin Pwd to turn on this option.**

9 **Once passwords are activated, press the Menu key to exit the menu. The following message is displayed**

```
SAVE CHANGES?
*NO
```

10 **Press the Next key until YES is displayed on the bottom line of the display window. Then press Select. Remove the security card from the card slot and put the printer back on line.**

Once a menu is password protected, you cannot enter the menus or make changes in it until you enter a valid password. You'll know whether or not the menu is password protected when you press the Select key when trying to enter the menu structure. If the menu is password protected, ENTER PASSWORD appears on the message window. Passwords are entered as alphanumeric values. If you enter an invalid password, the message window flashes INVALID PASSWORD for three seconds, and then returns to the parent menu. If you forget the password, the System Administrator can easily recover it by following the installation procedure again. When the correct password is entered, the submenu displays. The password for these two menus may be the same or different. See "Installation Menu" in chapter 4, "Printer Configuration," for more information.

» *Note: Password protection does not prevent software commands from changing functions.*

Removing and Re-installing the Tray Assembly

When you are installing the next four printer options (memory, Intellifont SIMM, optional interface, and internal hard disk drive), the internal tray assembly must be accessed first. Use the following instructions to remove the tray assembly from the printer and to reinstall the tray assembly once the printer option has been installed. A small-point Phillips screwdriver is needed for this procedure.

Caution: It's very important to protect the printer tray assembly from electrostatic damage while performing this task.

If an anti-static wrist strap is provided in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in **but turned off**). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

If you don't have an anti-static wrist strap, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the tray assembly cover. Redischarge your body each time after walking around and before touching the printer tray assembly again. Handle the tray carefully, and try to handle it by the edges only.

Removing the Tray Assembly

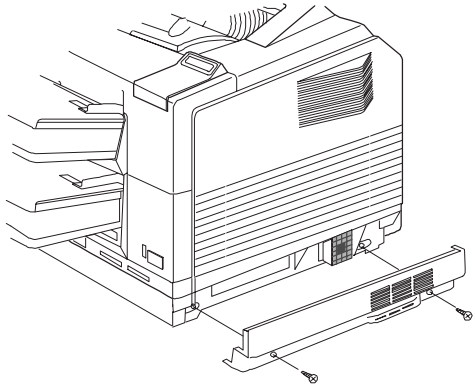
» Note: The following procedure is written for the system administrator. Do not attempt this procedure if you have no experience working with circuit boards.

1 Turn off both power switches and remove the power cord.

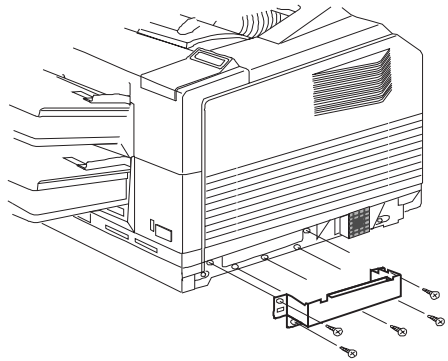
Disconnect all interface cables (parallel, serial, Ethernet and SCSI) from the printer.

2 **Position the printer so that the right side of the printer (to the right of the control panel) is facing you.**

3 **Remove the two screws on each end of the side panel by turning the screws counterclockwise to remove the side panel.**



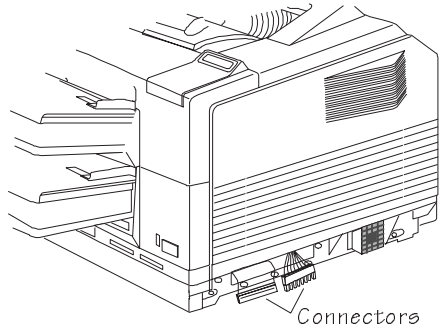
4 **Remove the five screws on the metal tray assembly cover.**



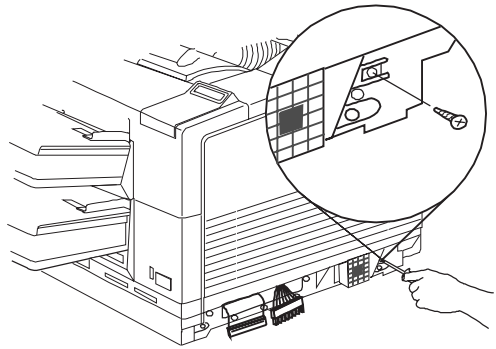
5 **Remove the metal cover revealing the tray assembly.**

6 Unplug the two connectors on the tray assembly.

The connector on the left is released by opening the ejector switches on each side of the connector and then pulling out the connector. The connector on the right is released by pressing in the tab on each side with one hand and pulling the connector out with the other hand.



7 Remove the tray assembly screw located to the right of the fan to release the tray assembly.

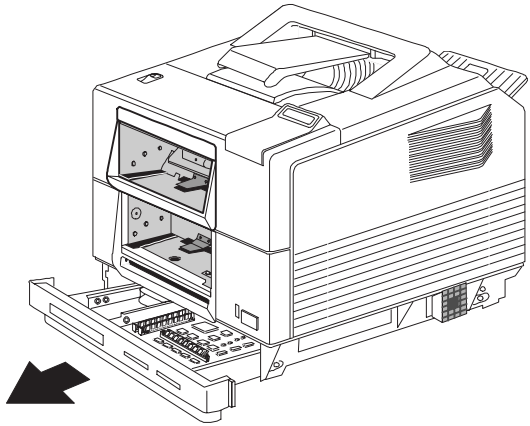


8 **From the front of the printer, pull the tray assembly straight out until it reaches the safety catches.**

9 **Momentarily lift the tray to gently pull it over the safety catches.**

Caution: Do Not continue lifting the tray assembly as you slide it out of the printer. After the tray assembly has been lifted over the safety catches, allow the tray to return to a level, horizontal position. Then pull the tray assembly straight out.

Take the tray assembly completely out of the printer.



You are now ready to install an optional feature in the printer. Follow the instructions for the feature you are installing, then return to the next section, “Re-installing the Tray Assembly” to complete the procedure.

Re-installing the Tray Assembly

After installing a memory upgrade, an optional interface, or an internal hard disk drive, use the following instructions to re-install the tray assembly.

CAUTION: It's very important to protect the printer tray assembly from electrostatic damage while performing this task.

If an anti-static wrist strap is provided in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in **but turned off**). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

If you don't have an anti-static wrist strap, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the tray assembly cover. Redischarge your body each time after walking around and before touching the printer tray assembly again. Handle the tray carefully, and try to handle it by the edges only.

» Note: The following procedure is written for the system administrator. Do not attempt this procedure if you have no experience working with circuit boards.

1. **Using both hands, carefully re-insert the tray assembly back into the slot on the front of the printer.**
2. **Replace the tray assembly screw in the hole located to the right of the fan.**

   Tighten the screw by turning it clockwise.
3. **Reconnect the two connectors on the tray assembly.**

   You should hear them snap into place.

4 **Replace the metal tray assembly cover using five screws to secure.**

The top of the cover must be inserted in a slot above the opening and the cover must be pushed in from the bottom to align the holes.

5 **Replace the side panel and secure it using two screws.**

6 **Reconnect all interface cables and the power cord and turn both printer power switches on.**

Memory Modules (SIMMs)

Additional printer memory on small boards called single in-line memory modules, or SIMMs, allows you to download more fonts, increase the printer's buffers (where it stores data sent from the computer), and duplex print at a higher resolution.

Your printer comes standard with 8 MB RAM and can be upgraded through the installation of additional SIMMs (4, 8, 16, or 32 MB SIMMs) to a maximum of 64 MB. (To upgrade to 64 MB, the two SIMM connectors would each need to contain 32 MB SIMMs, requiring that the 8 MB SIMM that comes standard with the printer be removed).

» *Note: When installing a memory upgrade, make sure the memory added is distributed among memory clients. See the Memory submenu section in chapter 4, "Printer Configuration," and chapter 5, "Additional Technical Information," for more information on memory distribution.*

Installing a SIMM

If you are replacing the 8 MB SIMM, you should first read the "Removing a SIMM" section of this chapter.

» *Note: The following instructions are written for the system administrator. Do not attempt this procedure if you have no experience working with circuit boards.*

Caution: It's very important to protect the printer tray assembly from electrostatic damage while performing this task.

If an anti-static wrist strap is provided in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in **but turned off**). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

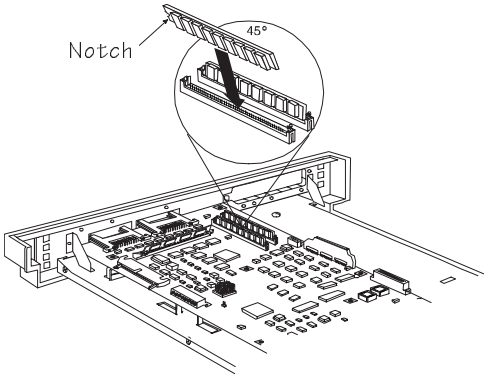
If you don't have an anti-static wrist strap, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the tray assembly cover. Redischarge your body each time after walking around and before touching the printer tray assembly again. Handle the tray assembly carefully, and try to handle it by the edges only.

To install a SIMM, follow these steps:

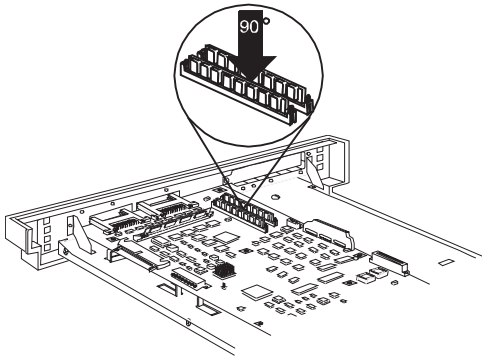
1 **Access the tray assembly by following the instructions in "Removing the Tray Assembly," earlier in this chapter.**

2 **Remove the new SIMM from the anti-static bag.**

3 Hold the new SIMM at a 45° angle with the notch on the left-hand side. Slide the new SIMM into the open SIMM connector.



4 Tilt the SIMM up to a 90° angle until you feel it snap into place.



5 Repeat steps 2 through 4 for each additional SIMM you are installing.

6 Return the tray assembly to the printer by following the instructions in “Re-installing the Tray Assembly,” earlier in this chapter.

Removing a SIMM

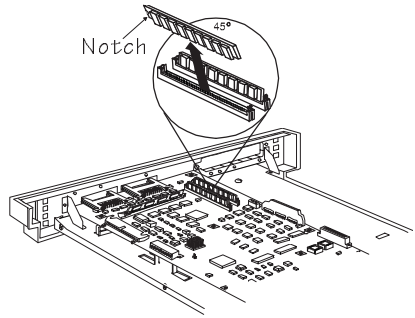
If both of the SIMM connectors are filled and you want to install more memory (for example, if you want to replace an 8 MB SIMM with a 32 MB SIMM), use the following procedure to remove a SIMM. Then refer to the previous section, "Installing a SIMM," for installation instructions.

» *Note: SIMM connector 0 (DRAM 0) must always have a SIMM installed.*

1 **If you have not already done so, access the tray assembly by following the instructions in "Removing the Tray Assembly," earlier in this chapter.**

2 **Using the release latch located on each side of the SIMM connector, release the SIMM.**

3 **Gently tilt the SIMM forward to a 45° angle. Then slide the SIMM up and out of the SIMM connector.**



4 **And then... go to ther previous section, "Installing a SIMM."**

Intellifont SIMM

An optional Intellifont SIMM increases the number of fonts available to the HP PCL 5 emulation on your printer from 20 to the 37 PCL 5 fonts available on a Hewlett-Packard LaserJet 4Si.

Installing the Intellifont SIMM

WARNING! Turn off the printer and unplug the power cord before taking the cover off the printer.

ACHTUNG! Bitte schalten Sie den Drucker aus und ziehen Sie den Netzstecker heraus bevor Sie die Druckerabdeckung öffnen.

Caution: It's very important to protect the printer tray assembly from electrostatic damage while performing this task.

If **an anti-static wrist strap is provided** in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in **but turned off**). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

If **you don't have an anti-static wrist strap**, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the tray assembly cover. Redischarge your body each time after walking around and before touching the printer tray assembly again.

1 **Access the printer tray assembly.**

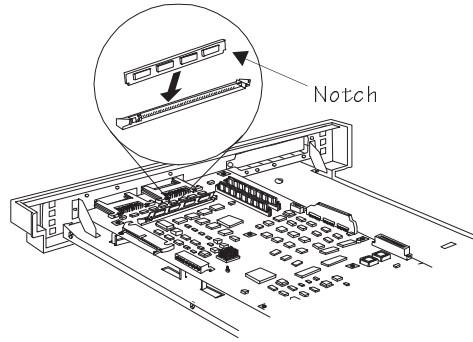
   Use the instructions in the “Removing the Tray Assembly,” earlier in this chapter.

2 **Position the tray assembly so the interface panel is on your right.**

3 **Remove the SIMM from the anti-static bag.**

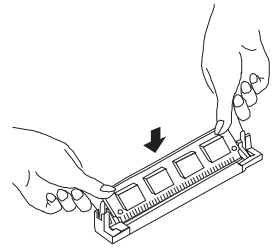
4 Insert the SIMM into the SIMM connector.

Hold the SIMM at a 90° angle to the controller board, with the notch in the bottom right corner. Then push gently in on it to seat it securely in the connector.



5 Snap the SIMM into place.

With a thumb on each top corner, gently press down on the SIMM to snap it into place (at approximately a 30° angle to the controller board).



6 Re-install the tray assembly and covers.

Use the instructions in the “Re-installing the Tray Assembly” section of this chapter.

Increasing the Disk Cache Size

If your printer has 12 MB of RAM or less, you must set the disk cache to a minimum of 48 KB (Administration/Memory/Disk Cache menu) to use the Intellifont SIMM.

» *Note: You may need to decrease one of the other memory clients before increasing the disk cache client, or add more memory.*

If your printer has more than 12 MB RAM, the size of the disk cache is automatically adjusted.

Verifying the Installation

Once you have installed the Intellifont SIMM, print a start-up page and an advanced status page to verify the installation.

1 **Wait for the printer message window to display** `IDLE`**.**

2 **If necessary, use the Administration/Startup Options/Startup Page menu to enable start-up pages.**

3 **Turn the printer off and back on again.**

In the Options section of the start-up page, a new option identified as `%cartridge2%` verifies the installation of the SIMM.

4 **If necessary, use the Administration/Special Pages/Status Page Type menu to change the default Standard setting to Advanced.**

5 **Print an Advanced Status Page (Administration/Special Pages/Status Page Type selection, followed by Administration/Special Pages/Print Status).**

The list of HP PCL fonts includes all of the new Intellifont fonts. Keep this status page for reference when accessing these fonts.

Font List

The following 37 fonts are now available for use. They can be automatically rotated to landscape orientation. All fonts are scalable and available in 35 symbol sets unless otherwise noted.

Serif Fonts

Clarendon Condensed Bold

Courier Medium
Courier Italic Medium
Courier Bold
Courier Italic Bold

Garamond (Stempel) Medium
Garamond (Stempel) Italic Medium
Garamond (Stempel) Bold
Garamond (Stempel) Italic Bold

Times Roman Medium
Times Roman Italic Medium
Times Roman Bold
Times Roman Italic Bold

Sans Serif Fonts

Albertus Semi Bold
Albertus Extra Bold

Antique Olive Medium
Antique Olive Italic Medium
Antique Olive Bold

Letter Gothic Medium
Letter Gothic Italic Medium
Letter Gothic Bold

Line Printer (16.66 pitch, 8.5 points, 25 symbol sets)

Omega Medium
Omega Italic Medium
Omega Bold
Omega Italic Bold

Univers Medium
Univers Italic Medium
Univers Bold
Univers Italic Bold

Univers Condensed Medium
Univers Condensed Italic Medium
Univers Condensed Bold
Univers Condensed Italic Bold

Pi or Symbol Font

ITC Zapf Dingbats (1 symbol set)

Script Fonts

Coronet Italic Medium

Marigold Medium

Accessing the Fonts

Using Your PCL Application

Use your PCL application to set the font for a single document. See your application documentation for information.

Using the Printer Configuration Menu

Use the printer configuration menu to set the default font for all PCL documents.

» *Note: Before beginning this procedure, you must have a PCL 5 font list from the advanced status page. See steps 4 and 5 of "Verify the Installation," above, for information on printing an advanced status page.*

1 **Access the Administation/PCL5/Default Font menu.**

2 **Choose the Select by Index option.**

3 **Access the Administration/PCL5/Default Font Idx menu.**

4 **Identify the appropriate font selection index.**

The font selection indexes are listed in the PCL 5 font list on the advanced status page.

5 **Save your changes and put the printer back on line.**

Installing Optional Interfaces

In addition to the three standard interfaces (Ethernet, RS-232C serial, and Centronics/IEEE 1284 parallel) your printer supports optional interfaces such as DECnet, TCP/IP, IBM 3270/5250A, and Token-Ring. Additional interface options allow greater flexibility when working in a complex network environment.

Depending on which optional kit you purchased for your printer, your option assembly kit may include some if not all of the following:

- An interface board with metal plate attached
- A daughterboard
- Two plastic feet
- A plastic ribbon cable
- Two mini support posts

A Phillips screwdriver is needed for this procedure.

Installing an Optional Interface Card and Daughterboard

» Note: The following instructions are written for the system administrator. Do not attempt this procedure if you have no experience working with circuit boards.

CAUTION: It's very important to protect the printer tray assembly from electrostatic damage while performing this task.

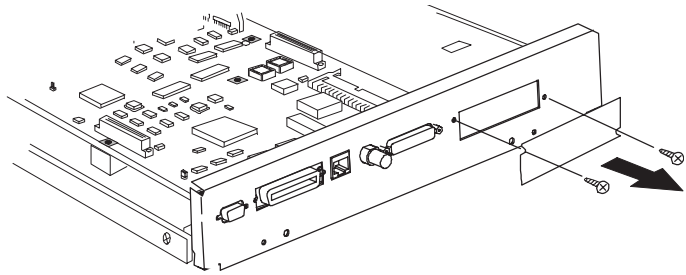
If **an anti-static wrist strap is provided** in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in **but turned off**). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

If **you don't have an anti-static wrist strap**, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the tray assembly cover. Redischarge your body each time after walking around and before touching the printer tray assembly again. Handle the tray assembly carefully, and try to handle it by the edges only.

Use the following procedure to install an optional network interface:

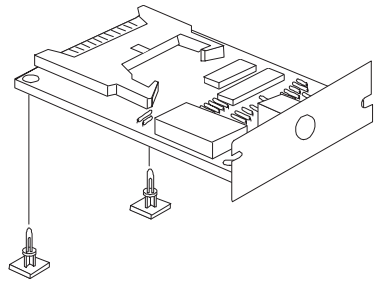
1 **Access the tray assembly by following the "Removing the Tray Assembly" procedure found earlier in this chapter.**

2 **Remove the optional I/O metal plate located to the right of the standard interface ports by removing the screw on each end of the plate.**



3 Snap the two plastic feet to the bottom side of the interface board on the opposite end from the interface connection

Note: Your optional interface card may look different than the one shown in the illustration.

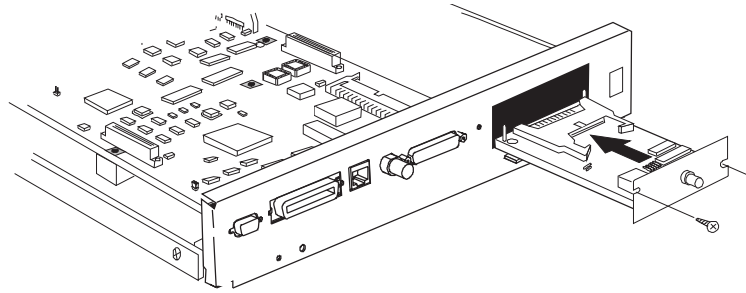


4 Peel the tape from the bottom of the plastic feet

5 With the plastic feet facing down, insert the interface card through the connector opening in the metal plate from the outside of the tray assembly.

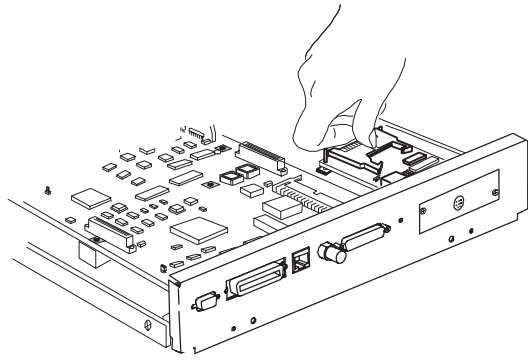
6 Using the two screws from the I/O plate you removed in step 2, mount the metal plate on the interface card to the connector opening.

» Note: Your optional interface card may look different than the one shown in the illustration.



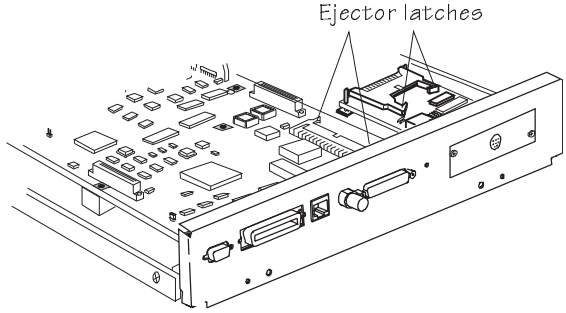
7 Once the metal plate is secure, press the interface board down to adhere the two plastic feet to the tray assembly.

» Note: Your optional interface card may look different than the one shown in the illustration.



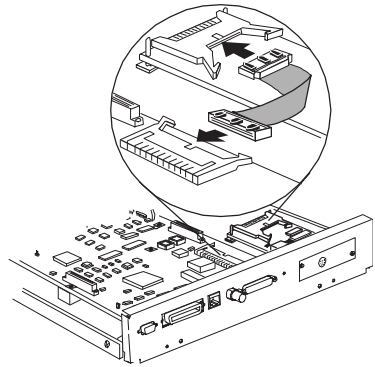
8 Open the two ejector latches on the interface board and the two on the controller board.

» Note: Your optional interface card may look different than the one shown in the illustration.

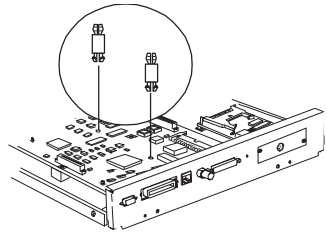


9 Take the plastic ribbon cable and fold it over so that the notches (keys) face upward on both connectors. Slide the

ribbon cable connectors onto the interface card connector and the controller board connector.



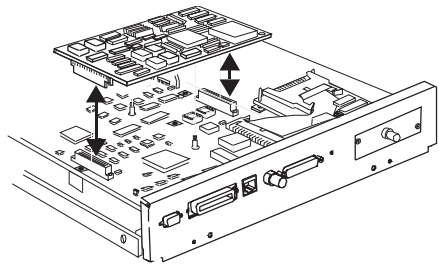
10 Install the two mini support posts in the two holes on the controller board.



11 Snap the daughterboard on the two mini support posts and the two 48-pin connectors.

The daughterboard fits only one way.

» *Note: Your daughterboard may look different than the one shown in the illustration.*



12 **Return the tray assembly to the printer by following the instructions in "Re-installing the Tray Assembly," earlier in this chapter.**

Using a Network Interface

For instructions on configuring your network interface, see the documentation with the interface.

Using a LocalTalk Interface

Connecting to the LocalTalk port involves three basic steps: assembling the proper interface cabling (use a LocalTalk-type kit such as Farallon's PhoneNET, available from your QMS vendor), making the connection, and making sure the necessary printing files are installed on the Macintosh.

The LocalTalk port is used to print if

- Your host is any member of the Apple Macintosh family. The instructions in this chapter explain how to connect a Macintosh to the QMS 1725E Print System.
- Your host is an IBM PC or compatible microcomputer, workstation, minicomputer, or mainframe computer that connects through a print network (such as TOPS or AppleShare) using LocalTalk-type connectors and boxes.

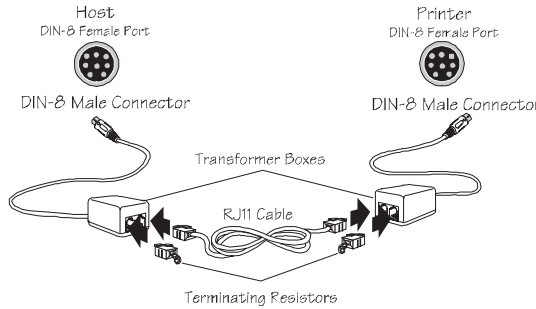
  If you're connecting to one of these hosts, you may need additional hardware or software. See your host or network documentation for details specific to your setup.

Hardware

Macintosh Interface Cabling

To connect your printer to a single Macintosh, you must have

- Two PhoneNET-type transformer boxes (one for the printer port and one for the Macintosh port), each with a DIN-8 connector
- An RJ11 (telephone) cable
- Two terminating resistors to close the open sockets left in the transformer boxes after the connection is made



If you're replacing a printer already connected to a Macintosh, you probably already have this equipment. If not, contact your QMS vendor or a local computer store.

If you're connecting the printer to an AppleTalk network with more than one Macintosh, see your PhoneNET and Macintosh documentation for more information.

Making the Connection

Use the following procedure to connect your printer to the Macintosh.

Caution: Turn off both the printer and the Macintosh before making the connection.

1 Plug the connector from one transformer box into the printer's LocalTalk port.

2 **Plug the connector from the other transformer box into the Macintosh printer port.**

3 **Connect the two transformer boxes with the telephone cable.**

4 **Put terminating resistors in all open sockets in the connector boxes.**

This ensures proper communication and helps speed up transmission.

5 **Turn on the printer.**

A start-up page should print if it has not been disabled.

Software

Printing from the Macintosh

If your Macintosh was previously connected to a PostScript printer, you can probably start printing now. See your application documentation for instructions on sending a document to the printer or see "Testing Macintosh Communication," later in this chapter.

However, to be able to use all your printer's special features (like collation, and 600x600 dpi printing), **or** if you've never printed to a PostScript printer before, you need to take a few minutes to load the following software from the Macintosh disks we shipped with your printer:

- **PS Executive Series printer utilities**

  PS Exec is a utilities program for controlling the printer from the Macintosh. For example, through PS Exec you can turn off the start-up page, install printer-resident screen fonts, download fonts, print font samples, rename the printer, and manage hard disks. Many of the procedures described in this manual involve using PS Exec.

- **LaserWriter 8.*x* and the 1725 PPD file**

  Although your Macintosh system software came with a LaserWriter driver, we recommend you install LaserWriter 8.*x* and the

1725PPD (a printer description file) so you can take advantage of special features like multi-resolution printing and collation.

- **Application-specific printer files**

  If you plan to print from Aldus PageMaker, Aldus FreeHand, Aldus PrePrint, Adobe Separator, or QuarkXPress, you'll also want to install the latest printer description file (PPD, PDX, or PDF) for your particular software. (You can probably print without them, but you may not be able to access all your printer's features, and you may get an error message telling you to change the printer name.)

Installing the Printer Utilities

1. **With the Macintosh on, insert the Macintosh Format PS Executive Series Utilities disk in the disk drive.**
2. **Double-click the PSExec3.*xx*.sea file.**
3. **In the window that appears, choose Continue.**
4. **In the window that appears, specify a folder in which to install the utilities and choose Save.**
5. **After all the files are extracted, choose Quit.**
6. **Open the Utilities folder in the PSExec 3.*xx* Folder and double-click PSInstall to personalize the program.**
7. **Check the README file for updates, and see the PS Exec online help for information on using the program.**

Installing LaserWriter 8.x and the 1725 4.1 PPD

» *Note: If after installing LaserWriter 8.x you experience problems printing, reinstate the system 7.x LaserWriter driver.*

1. **If you haven't already, follow the instructions given above in "Installing the Printer Utilities."**
2. **Open the PSExec 3.*xx* Folder, then the Drivers folder, then the System Utilities folder to display the LaserWriter 8.*x* icon (among other things).**

3 **Drag the LaserWriter 8.*x* icon to your current System Folder. (The system knows where to copy it.)**

» Note: All Macintosh users on a network must use the same version of the LaserWriter and Laser Prep files to run correctly. For example, if the network has a mixture of LaserWriter 6.0 and 7.0, the printer will experience frequent reinitialization problems. To check the version number, select the LaserWriter icon and then hold down the Command key and press the I key. The driver version number appears in the Info window on the second to last line. LaserWriter 7.xx does not require a Laser Prep file to work correctly with your printer. The Laser Prep information is located within the LaserWriter driver itself.

4 **Create a Printer Descriptions folder:**

System 7 users—Create a folder called Printer Descriptions inside the Extensions folder inside the System Folder.

System 6 users—Create a folder called Printer Descriptions inside the System Folder.

5 **Open the PPDs folder inside the Drivers folder in the PSExec 3.*xx* Folder.**

6 **Open the Ver 4.1 folder inside the PPDs folder.**

7 **Select the QMS 1725 printer description file in the Ver 4.1 folder and drag it to the Printer Descriptions folder you created in step 4.**

8 **From the Apple menu, choose Chooser.**

9 **In the Chooser window, select the LaserWriter 8.*x* icon and select the QMS 1725.**

10 **Choose the Setup button.**

11 **Choose the Select PPD button to set up printer-specific features. (Choose the AutoSetup button to set up the printer automatically.)**

12 **Choose QMS 1725 from the list of PPDs.**

13 Choose Select. Now you can access printer features by choosing Options in the Print dialog box. Choose Help in the Options dialog box for information on these options.

Installing Printer Description Files

If you plan to print from Aldus PageMaker, Aldus FreeHand, Aldus PrePrint, Adobe Separator, or QuarkXPress, install the appropriate printer description file (PPD, PDX, and/or PDF) as described below:

» *Note: The application (PageMaker, FreeHand, PrePrint, Separator, or QuarkXPress) should be installed before you install the printer description file(s).*

1 If you haven't already, follow the instructions given above in "Installing the Printer Utilities."

2 Install the appropriate printer description file(s) for your application from the Drivers folder in the PS Exec folder:

- **If you use Adobe Separator,** install the PPD file. Your Separator documentation explains where to put it.
- **If you use QuarkXPress,** install the PDF in the same folder as QuarkXPress. Check your QuarkXPress documentation for details.
- **If you use Aldus PageMaker 5.*x*,** install the version 4.1 PPD in the Printer Descriptions folder.
- **If you use Aldus PageMaker 4.*x*,** install the version 3.0 PPD and PDX files in the PPDs folder in the Aldus folder in the System Folder.
- **If you use Aldus FreeHand 4.*x*,** install the version 4.1 PPD in the Printer Descriptions folder.
- **If you use Aldus FreeHand 3.*x*,** install the version 3.0 PPD and PDX files in the PPDs folder in the Aldus folder in the System Folder.
- **If you use Aldus PrePrint,** install the version 3.0 PPD and PDX files in the PPDs folder in the Aldus folder in the System Folder.

Testing Macintosh Communication

You can check communication between the printer selected in the Chooser and the Macintosh by sending a file to the printer from an application (see your application documentation for more information) or by printing a directory, as described here:

1 **Display a disk or folder window.**

2 **Set up page information.**

Choose Page Setup from the File menu. Select paper size, printing orientation, and any other necessary options. Then select OK.

3 **Print a directory or a window.**

a Choose Print Directory or Print Window from the File menu. A dialog box appears.

b Select the printing options you want; then click OK. If no page prints, check chapter 6, “Troubleshooting,” of the *Operation* guide.

You're now ready to print from your Macintosh.

From this point, you'll probably perform most printing tasks from your application. For specific information, check the printing section in your application documentation.

For information on print media types and sizes, see chapter 2, “Print Media,” in the *Reference* guide.

Setting LocalTalk Interface Parameters

Use the Administration/Communications/LocalTalk menu to set the LocalTalk interface values used for printer-host communication.

Mode

Enables or disables the communication interface.

Menu	Administration/Communications/LocalTalk/Mode
Choices	Enabled—Establish one-way LocalTalk communication (from the host to the printer). Disabled—Turn off the LocalTalk interface (the printer stops accepting LocalTalk interface print jobs).
Default	Enabled
Notes	The printer must be restarted for changes to the Mode menu to take effect. You can either let the printer restart automatically after you save the change and exit the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Connection

Allows you to enable or disable print spooling.

Menu	Administration/Communications/LocalTalk/Connection
Choices	Conventional—Allow one LocalTalk connection and accept only one print job at a time. If two users send print jobs to the printer, the workstation belonging to the first user is unavailable until the first job has been printed, and the workstation belonging to the second user is unavailable until both jobs have been printed. Spool—Allow multiple LocalTalk connections and accept (spools) more than one print job at a time. Workstations are available while jobs are printing. Both—Allow both single and multiple LocalTalk connections.
Default	Conventional
Notes	The printer must be restarted for changes to the Connection menu to take effect. You can either let the printer restart automatically after you save the change and exit the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Minimum Number of Kilobytes for Spooling

Sets the minimum number of kilobytes of system memory allocated to the LocalTalk interface.

Menu	Administration/Communications/LocalTalk/Min K Spool
Choices	00000-99999
Default	00015
Notes	This value must be less than the K Mem for Spool value. A 00000 value does not turn off the spooling buffer for the parallel interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization. The printer must be restarted for changes to the Min K Spool menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a LocalTalk interface to a PostScript printer. See chapter 5, "Additional Technical Information," for a full discussion of PS Protocol.

Menu	Administration/Communications/LocalTalk/PS Protocol
Choices	**Normal**—Enable standard, ASCII hex protocol. Data is sent and received in ASCII format. **Normal Fixed**—Enable standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators. **Binary**—Enable binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. **Binary Fixed**—Enable binary communications protocol. Print jobs can not alter this value through PostScript operators. Data in the printable ASCII range also prints. **QBinary**—Enables binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. **QBinary Fixed**—Enables binary communications protocol. Print jobs cannot alter this value through PostScript operators. Data in the printable ASCII range also prints.

Default	Normal

Default Job Priority

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously. In other words, you can give jobs received via the LocalTalk interface priority over jobs received via the parallel and serial interfaces.

Menu	Administration/Communications/LocalTalk/Def Job Prio
Choices	001-100 (highest-lowest priority)
Default	001 (highest priority)

Hard Disks

Internal

The optional SCSI internal hard disk drive provides space to store downloaded fonts and optional emulations and increases the font cache of the printer. The latest information on hard disks available for your printer can be found through Q-FAX (see appendix A, "QMS Customer Support," for Q-FAX instructions).

Caution: If you connect to this printer an external hard disk you previously used with an earlier QMS Crown printer (QMS 860, QMS 860 Plus, QMS 1060, QMS 1060E, QMS 1660, QMS 1660E, QMS-PS 1700, QMS 1725, QMS-PS 2000, QMS 2025, QMS-PS 3200, or QMS 3225, QMS 4525, QMS ColorScript 210/230, QMS ColorScript Laser 1000, or QMS *magicolor* Printer), this QMS 1725E Print System software release will automatically reorganize the files on the hard disk when the printer is turned back on again. (The printer release number is listed on both the start-up and the status page.) Once this reorganization is done, the files on the hard disk can no longer be accessed if the hard disk is reattached to an earlier QMS Crown printer.

The following is included in your hard disk drive assembly kit:

- An anti-static wristband
- The hard disk drive with mounting brackets
- Phillips screws
- A power cable
- A plastic ribbon cable

A Phillips screwdriver and needle-nose pliers are needed for this procedure.

Installing the Hard Disk

The following procedure is written for the system administrator. Do not attempt this procedure if you have no experience working with circuit boards.

Caution: It's very important to protect the printer tray assembly from electrostatic damage while performing this task.

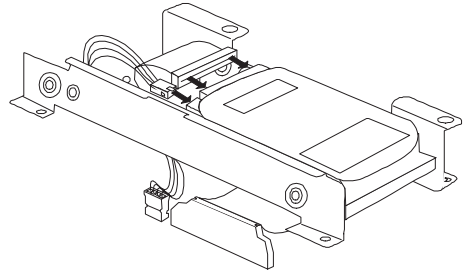
If **an anti-static wrist strap is provided** in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in **but turned off**). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

If **you don't have an anti-static wrist strap**, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the tray assembly cover. Redisccharge your body each time after walking around and before touching the printer tray assembly again. Handle the tray assembly and disk drive carefully, and try to handle it by the edges only.

Use the following instructions to install the optional hard disk drive:

1 **Access the tray assembly by following the instructions in "Removing the Tray Assembly," earlier in this chapter.**

2 **Connect the power cable and ribbon cable from the assembly kit to the hard disk connectors.**



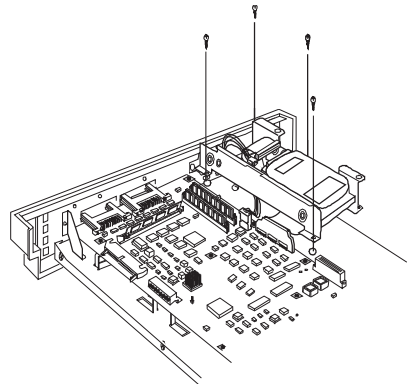
» Note: The extra connector on the power cable is for future use and does not connect to anything at this time.

3 **With the controller board ribbon cable and the power cable fitting under the brackets on the hard disk, attach the other end of ribbon cable to the controller board connector and the power cable to the 4-pin controller board connector.**

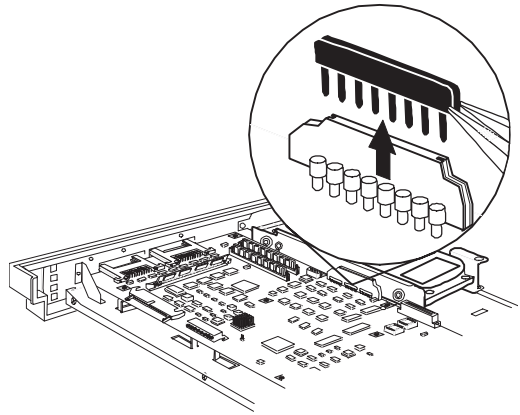
The power cable is keyed so it fits only one way.

4 **Line up the holes on the tray assembly with the holes on the hard disk bracket flanges.**

5 **Insert four Phillips screws into the holes and tighten with a screwdriver.**



6 **Using needle-nose pliers, remove the three termination resistor packs from the controller board near the controller board connector.**



7 **Return the tray assembly to the printer by following the instructions in "Re-installing the Tray Assembly," earlier in this chapter.**

» Note: We recommend that when an internal hard drive is installed in the printer, it be given an address of DSK6. Refer to the "Identifying Hard Disks" section of this chapter for more information.

External

In addition to an internal hard disk drive, the QMS 1725E printer supports up to three optional external SCSI hard disks (four if no internal hard drive is installed). The external hard disks connect to the SCSI port on the rear panel of the printer. These disks provide space for optional emulations and permanent downloading of fonts. This section explains the Disk Operations menu, which is accessed through the printer control panel, and must be used when installing or removing a printer option (such as an optional emulation).

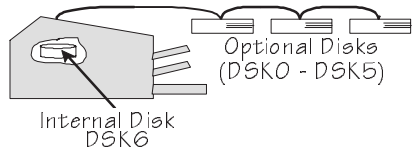
Caution: If you connect to this printer an external hard disk you previously used with an earlier QMS Crown printer (QMS 860, QMS 860 Plus, QMS 1060, QMS 1060E, QMS 1660, QMS 1660E, QMS-PS 1700, QMS 1725, QMS-PS 2000, QMS 2025, QMS-PS 3200, or QMS 3225, QMS 4525, QMS ColorScript 210/230, QMS ColorScript Laser 1000, or QMS *magicolor* Printer), this QMS 1725E Print System software release will automatically reorganize the files on the hard disk when the printer is turned back on again. (The printer release number is listed on both the start-up and the status page.) Once this reorganization is done, the files on the hard disk can no longer be accessed if the hard disk is reattached to an earlier QMS Crown printer.

Identifying

The documentation that comes with your external SCSI (Small Computer System Interface) hard disk should contain all of the necessary information for connecting and configuring the disk.

Device Numbers

Hard disks are identified by device numbers which you assign. Valid choices for external SCSI hard disks range from DSK0 to DSK5. However, you cannot repeat numbers; each device number must be unique. The recommended device number for the internal SCSI hard disk, if present, is DSK6.



» Note: For the printer to recognize any attached hard disk(s), each hard disk must be turned on before you turn on the printer. DISK ONLINE appears on the start-up page if the printer recognizes the disk(s).

Storage Options

Hard disks provide true virtual memory as well as storage for character bitmaps, downloaded outline fonts, and other files.

The Disk Operations Menu

The Administration/Disk Operations menu contains all of the options you need to format a hard disk, as well as to install optional fonts on and remove them from a hard disk.

» *Note: The install, remove, and format disk operations do not include support for a Font Folio disk. You must download the fonts to your hard disk from host applications.*

Error Messages

The following three messages may appear while you are using the Disk Operations menu.

Message	Meaning	Action
FORMAT FAILED	The hard disk cannot be used.	Press the Menu key to remove the message, and contact your QMS vendor.
WRITE ERROR	The hard disk encountered a write error, or there is no room for the data on the hard disk or in RAM.	Press the Menu key to remove the message, and restart the operation from the beginning.

Formatting a Hard Disk

You have two ways of formatting a hard disk:

- PS Executive Series Utilities
- Printer configuration menu

Using PS Executive Series Utilities

The PS Executive Series Utilities offer formatting options for both Macintosh and PC setups. See the on-line documentation for details on formatting disks.

Using the Printer Configuration Menu

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window.

» *Note: You may need to press the Next key one or more times to advance through the list of selections or options.*

Use this key	to...	The message window reads...
Select	Access the Administration/Disk Operations/Format Disk menu.	`DISK OPERATIONS` `FORMAT DISK`
Select	Access the Format Disk/Dsk#: menu.	`FORMAT DISK` `DSK#: x`
Next	Scroll through the list of attached disks.	`FORMAT DISK` `DSK: x`
Select	Select the disk and display a format confirmation message.	`FORMAT DISK` `ARE YOU SURE?`
Select	Begin the formatting process. The hard disk is formatted while the system reboots.	`FORMAT DISK` `FORMATTING...`
	You are informed when the formatting process is complete. The printer then reboots, and a start-up page prints (if enabled).	`FORMAT DISK` `FORMAT COMPLETE`

» *Note: After an unformatted disk is formatted and the* FORMAT COMPLETE *message displays, you must turn the printer off and back on again before the printer can recognize the disk.*

Fonts on the Hard Disk

Optional fonts can be installed in two ways:

- You may use optional fonts by inserting the font card in one of the card slots below the printer's paper cassette. However, when you remove the font card from the card slot, you can no longer use those fonts. This procedure is covered in the “Using a Font Card” section found earlier in this chapter.
- You can copy the contents of a font card to a hard disk if one is available. The procedure that follows describes how to install the font card on your hard disk. Once the font is stored on disk, they can be downloaded to the printer's memory when needed for printing.

Installing an Optional Font

Procedure

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window (DSK refers to the hard disk number, and CAR0 and CAR1 refer to the font card slot number).

» *Note: You may need to press the Next key one or more times to advance through the list of selections or options.*

Key	Purpose	Message
Select	Accesses the Administration/Disk Operations/Install Option menu.	`DISK OPERATIONS` `INSTALL OPTION`
Select	Accesses the Format Disk/Dsk#: menu.	`INSTALL OPTION` `DSK#: x`
Next	Scrolls through the list of attached disks.	`FORMAT DISK` `DSK: x`
Select	Selects the disk and accesses the card address from which the optional font is being installed.	`INSTALL SOURCE` `CAR#: x`

Select	Prompts you to insert the font card in one of the card slots below the printer's media cassette.	`INSTALL OPTION` `INSERT MEDIA`
	Begins reading data from the card and installing the appropriate files on the hard disk This usually takes several minutes.	`INSTALL OPTION` `READING DATA...`
	Acknowledges completion of the installation process.	`INSTALL OPTION` `INSTALL COMPLETE`
Menu	Exits from the Install Option menu and returns to the Disk Operations menu.	`DISK OPERATIONS` `INSTALL OPTION`

After the option is installed, remove the card from the slot and place the printer back on line.

Removing an Optional Font

Use the Administration/Disk Operations/Remove Option to remove optional fonts from your hard disk. You need the original font card containing the files. The Remove Option compares the contents of the card against the contents of the hard disk and then deletes the matching files from the hard disk.

Procedure

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window (DSK refers to the hard disk number, and CAR0 and CAR1 refer to the font or card number).

» *Note: You may need to press the Next key one or more times to advance through the list of selections or options.*

Key	Purpose	Message
Select	Accesses the Administration/Disk Operations/Remove Option menu.	`DISK OPERATIONS` `REMOVE OPTION`
Select	Accesses the Remove Option/Dsk#: menu.	`REMOVE OPTION` `DSK#: x`

Next	Scrolls through the list of attached disks.	REMOVE OPTION DSK: *x*
Select	Selects the disk and accesses the card address from which removal information is being read.	REMOVE SOURCE CAR#: *x*
Select	Prompts you to insert the font card in one of the card slots below the printer's media cassette.	REMOVE OPTION INSERT MEDIA
	Begins reading data from the card and removing the appropriate fonts from the hard disk. This usually takes several minutes.	REMOVE OPTION READING DATA...
	Acknowledges completion of the installation process.	REMOVE OPTION REMOVE COMPLETE
Menu	Exits the Install Option menu and returns to the Disk Operations menu.	DISK OPERATIONS REMOVE OPTION

After the option is removed, remove the card from the slot and place the printer back on line.

Downloading an Emulation

Optional emulations, such as LN03 and QUIC II, are available as PostScript files on floppy disks. This section describes how to download an optional emulation from the floppy disk to the printer's hard disk.

» *Note: At least one hard disk (internal or external) must be installed on the printer before you can download an emulation. If more than one hard disk is available, the emulation automatically installs itself on the disk with the most free storage space.*

Once an emulation is downloaded, the only way to remove it is to reformat the hard disk (using the Administration/Disk Operations/Format Disk menu or PS Executive Series Utilities).

Procedure

1 **If necessary connect the PC to the printer's parallel or serial port.**

2 **Turn on the printer, and wait for** `IDLE` **to appear in the message window.**

3 **Insert the emulation disk in your PC's 3.5" disk drive, and change to that drive (for example, if you're using the A drive, type** `a:↵`**).**

4 **Send the emulation to the printer's hard disk.**

- If your PC and printer are connected through the parallel port, type

  ```
  copy /b *.ps lpt#↵
  ```

  where # is 1 to 3. (/b refers to binary files.)

- If your PC and printer are connected through the serial port, type

  ```
  copy /b *.ps com#
  ```

  where # is 1 to 4. (/b refers to binary files.)

5 **When the downloading is complete, reboot the printer.**

The emulation is ready to be used.

Emulations on the Hard Disk

An optional emulation can be installed in one of two ways:

- You can run an emulation by inserting the emulation card in the card slot. When you remove an emulation card from the card slot, you can no longer run that emulation.
- You can also copy the contents of an emulation card to an internal or external hard disk if one is installed. The following section

will describe the procedure for copying and removing emulations on the hard disk.

Installing an Optional Emulation

Caution: You must have a minimum of 12 MB of RAM to run an emulation that has been copied to a hard disk.

Use the Install Option selection from the Disk Operations menu. Refer to the instructions in chapter 4, "Printer Configuration," for using the printer control panel. To install an optional emulation, use this procedure:

1. **Make sure the printer is on and idle. From the Administration menu, select the Disk Operations submenu.**
2. **Press the Next key until** `INSTALL OPTION` **displays.**
3. **Press the Select key.**

   Then press the Next key until the destination of the optional emulation displays in the message window.
4. **Press the Select key.**

   Then press the Next key until the source of the optional emulation displays in the message window.
5. **Press the Select key.**

   You are prompted to insert the emulation card into the card slot.
6. **The hard disk then copies the contents of the card. When all of the contents are copied, press the Menu key to exit the menu. Press the Online/Offline key to allow the printer to receive data from the host.**

Removing a Printer Emulation

Use the Remove Option menu selection if you need to remove an installed option from the hard drive. To remove an emulation, you need the original emulation card containing the emulation files. The

Remove Option selection in the Disk Operations submenu compares the contents of the emulation card with the contents of the hard drive. The matching files are then deleted from the hard drive. To remove a printer emulation, follow this procedure:

1 **Make sure the printer is on and idle. From the Administration menu, select the Disk Operations submenu.**

2 **Press the Next key until** `REMOVE OPTION` **displays.**

3 **Press the Select key.**

Then press the Next key until the address of the hard disk containing the optional emulation displays in the message window.

4 **Press the Select key.**

Then press the Next key until the address of the card containing the emulation displays in the message window.

5 **Press the Select key.**

You are prompted to insert the emulation card into the card slot.

6 **The hard disk then reads the contents of the card and the matching files are deleted from the hard disk. When all the matching files are deleted, press the Menu key to exit the menu. Press the Online/Offline key to allow the printer to receive data from the host.**

Kanji Fonts

The QMS Kanji Option Kit contains a pre-formatted SCSI hard disk that contains Kanji fonts and other files. These fonts can be printed at a variety of point sizes and in different styles and resolutions.

The Kanji fonts Ryumin Light-KL and Gothic BBB-Medium are licensed to QMS by Morisawa and Company, Ltd., and the fonts Mincho Medium, Mincho Heavy, Gothic Bold, and Gothic Heavy are licensed to QMS by TypeBank. Once the QMS 1725E Print System

has an optional Kanji hard disk installed, the Kanji fonts are available for use just as if they were resident in the printer.

Hardware Requirements

To use your QMS Kanji fonts, you need

- A QMS Kanji Option Kit
- Minimum of 12 MB memory
- A Macintosh, IBM PC, or compatible computer with a Kanji operating system and a Kanji application.

» Note: Your printer can't support Kanji with the standard memory; you must add an additional 4 MB of memory to the printer for Kanji support. This additional memory will also increase speed because additional memory is allocated to font caching.

Installing the Kanji Disk

The following instruction for installing an external Kanji disk describes the general steps for installation. Refer to *QMS Crown Kanji Option Installation Instructions*, which accompanies the Kanji kit for detailed instruction.

Caution: The Japanese fonts are factory installed on a formatted hard disk drive. DO NOT reformat or initialize the QMS Kanji hard disk drive. Reformatting this drive erases all data, fonts, and files on the disk. The QMS Crown Kanji Option Kit warranty does not cover this error.

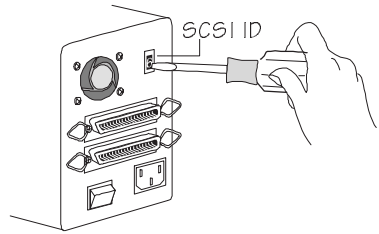
1 **Turn off the printer's front and rear power switches.**

2 **Lift the Kanji hard disk drive out of its shipping container, place it on a level surface, and remove any packing material.**

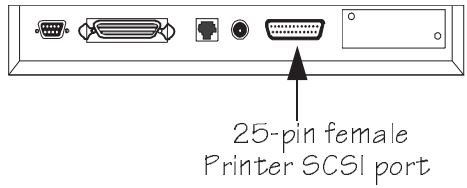
3 **Assign a unique SCSI device number.**

Multiple disks may be attached in a daisy chain. Each hard disk in the chain has a device number. The device number identifies each hard disk (in the range 0 to 6), and assigns a drive priority on the chain, with 6 representing the highest priority. **Do not use**

the reserved settings of 7, 8, or 9. Your Kanji hard disk is preset at the factory to device number 6. Use a pointed object such as a small tip screwdriver, paper clip, or ball point pen to press the SCSI ID selector button if changing the device number is necessary.

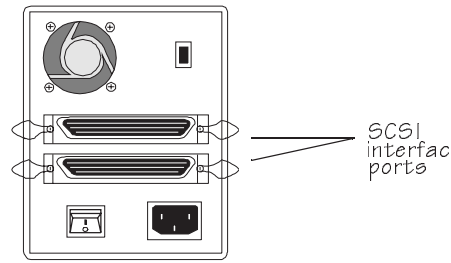


4 Connect the 25-pin end of the SCSI cable to the external SCSI port on the printer's interface panel.



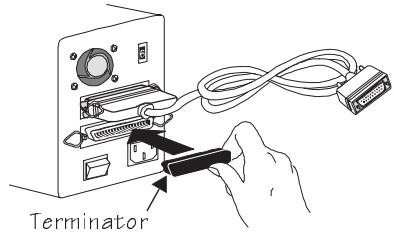
5 Connect the 50-pin end of the SCSI cable to one of the Kanji SCSI interface ports.

If you have two or more hard disk drives, the next hard disk drive in the chain is connected to the second SCSI interface port on the Kanji hard disk drive. If your printer has an internal hard disk installed, a maximum of three external hard disk drives may be linked together.



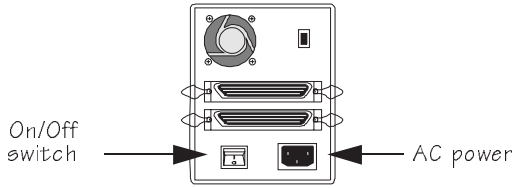
6 Terminate the last hard disk drive in the chain by plugging a terminator into the empty SCSI interface port at the rear of the hard disk drive.

When two or more hard disk drives are chained, the last drive on the chain must be terminated. Only one disk in a chain of hard disk drives may be terminated. If your Kanji hard disk drive is the only hard disk drive attached to the printer then it must be terminated.



» Note: If you are installing the Kanji hard disk drive in a chain with different brands of disk drives, you must check the methods of termination for those drives. See the documentation for those hard disk drives for more information on termination. Improper termination can cause data I/O problems and possibly damage the disk drive or data on the disk.

7 Connect the power cord to the Kanji hard disk drive and plug the other end into a grounded AC outlet.



8 Turn on the Kanji hard disk drive, and any other external hard disk drives present.

9 Turn on both power switches on the printer.

» Note: For the printer to recognize any attached hard disk(s), each hard disk must be turned on before you turn on the printer. DISK ONLINE appears on the start-up page if the printer recognizes the disk(s).

Configuring the Printer

This section provides information on reconfiguring and adding additional memory, and configuring other menu options for Kanji.

Reconfigure the Memory

Due to the size of the Kanji two-byte font sets, you will need to reallocate the printer's memory for specific memory clients.

» Note: Your printer can't support Kanji with the standard memory; you must add an additional 4 MB of memory to the printer for Kanji support. This additional memory will also increase speed because additional memory is allocated to font caching.

Procedure

We recommend that you read this entire procedure before modifying any memory settings. If you experience problems when reconfiguring the printer's memory, reset the printer to the default memory settings using the instructions provided in your printer user's guide for Administration/Memory/Frame Buffer.

Caution: If you have already reconfigured your QMS printer's memory with settings specific to your print environment, do not use the Administration/Memory/Frame Buffer simplified method. Instead print an advanced status page prior to changing them to the minimum Kanji settings, in case you need to return to your original memory settings.

1 Access the Administration/Memory menu via the control panel.

2 Change the following Kanji settings on your printer.

Press the Previous or Next key to advance through the different memory client

Memory Client	Minimum Kanji Setting
K Mem for Spool	112
K Mem for PSHeap	3540
K Mem PS Fonts	1024
K Mem Emulation	768
K Mem Emul Temp	256
K Mem Display	202
K Mem Disk Cache	256

Match a control panel memory client that needs to be changed with an associated minimum Kanji setting above. With that memory client displayed in the message window, press the Select key once.

» *Note: If you are unable to reassign the memory in the memory clients to satisfy the minimum required settings shown in the preceding table, you will need to add more memory to your printer. See the "Memory" section found in this chapter for SIMM installation instructions.*

3 A numerical value is displayed (expressed as a 5-digit number), showing the current memory setting for that specific memory selection. Using the Previous or Next key, change the value of each digit (up or down) to reflect the new memory setting shown in step 2.

4 Repeat steps 2 and 3 for each memory setting that needs to be changed. If you set the wrong value for a memory client, repeat the procedure only for that memory client.

5 When you have changed all of the specified memory clients to their new settings, press the Menu key until the Online or Ready indicator lights.

This causes the printer to reset and it may take a few minutes before it returns to IDLE.

Example

» Note: This is an example of the control panel messages on a QMS 1725E Print System showing K Mem For PSHeap setting of 01328.

Use this key	to...	The message window reads...
Select	Advance to the Administration Memory menu.	MEMORY K MEM FOR SPOOL
Next	Advance to the K Mem for PSHeap selection.	MEMORY K MEM FOR PSHEAP
Select (2 times)	Access the K Mem for PSHeap selection and displays the 01328 memory setting with the first digit flashing. Keep 0 as the first digit of this number and move to the second digit.	K MEM FOR PSHEAP 01328
Next (2 times)	Change the second digit of the number to 3.	K MEM FOR PSHEAP 03328
Select	Move to the third digit of the number.	K MEM FOR PSHEAP 03328
Next (2 times)	Change this digit from 3 to 5.	K MEM FOR PSHEAP 03528
Select (2 times)	Move to the fourth digit of this number.	K MEM FOR PSHEAP 03528
Next	Change this digit from 2 to 4.	K MEM FOR PSHEAP 03548
Select (2 times)	Move to the fifth digit of this number.	K MEM FOR PSHEAP 03548
Next (2 times)	Change this digit from 8 to 0.	K MEM FOR PSHEAP 03540
Select	Verify the K Mem for PSHeap setting. Return (after 3 seconds) to the K Mem for PS Heap client.	03540 IS SELECTED MEMORY K MEM FOR PSHEAP

Updating System Software

The system software in your *QMS 1725E Print System* is stored on 4 MB of flash ROM, read-only memory that can be erased and rewritten to "in a flash." This allows you to update the system software without opening up the printer and installing new PROMs. Updated system software allows you to take advantage of future enhancements to the printer.

» Note: The software loadable system mentioned in this section does not modify the code used by QMS Viking Interface cards.

Use the Administration/Miscellaneous/New Flash Image menu to update the system software (image in flash ROM).

Menu	Administration/Miscellaneous/New Flash Image
Choices	Yes—Download new system code No—Don't download new system code
Default	Yes

Requirements

The following table describes the minimum requirements needed to download system software to your 1725E Print System.

Downloading via:	Macintosh	Parallel	Serial
Free hard disk space needed on host computer	Minimum 1.5 MB	Minimum 1.5 MB	Minimum 1.5 MB

Notes	Requires connection from Macintosh serial port to serial port of printer. Cable must be wired as null modem or null modem adaptor attached.	Recommended method for downloading from an IBM or compatible PC. Fastest download method. No additional cables or changes of port settings required.	For use when parallel method is unavailable. Requires null modem cable (see Appendix B for cable information). Also requires software to set computer's serial port to 38400 baud (software available from QMS Bulletin Board

Procedure—Macintosh Users

About the SystemLoader Application

The SystemLoader application is used to download printer system software from a Macintosh to the printer. It must be decompressed from two Macintosh disks onto your Macintosh's hard disk before it can be used.

Decompressing the SystemLoader Application

The SystemLoader application comes on two disks. Before you can update the printer's system software, you must decompress the files on the disks. Use the following procedure:

1 **Create a new folder on the Macintosh.**

2 **Copy the contents of both disks to the new folder.**

3 **Double-click the SystemLoader.1 file icon.**

The UnStuffIt application starts up, decompresses the SYSTEMLOADER.1 and SYSTEMLOADER.2 files, and joins them to create the SystemLoader application.

Downloading the System Software

After you have decompressed the SystemLoader application, as described in the previous section, use the following procedure to update the system software in flash memory.

1 **Connect the Macintosh to the printer's serial port.**

You can use either the printer or modem port on the Macintosh. However, the modem port provides the fastest download.

2 **Turn on the printer, wait for `IDLE` to appear in the message window, and then print an advanced status page.**

This procedure should not change the current configuration settings. However, the advanced status page provides a record of all current configuration settings, so you can verify that they are the same after the system software has been updated.

3 **Access the Administration/Miscellaneous/New Flash Image menu.**

4 **Select Yes in the New Flash Image menu.**

The printer automatically reboots and waits for the new system software (image) to be sent from your Macintosh.

5 **Send the new image to the printer.**

a At the Macintosh, double-click the SystemLoader icon.

b In the dialog box that appears, make sure the correct download port is selected, and then choose the Send button to start the download.

The downloading process takes about 15 minutes. After the updated system software has been written to flash ROM, the message `Download Complete!` appears on the Macintosh screen, and the printer reboots with the new system code.

Note: The new flash image will not erase the old image until the printer verifies that the new image is valid.

6 **Print another advanced status page, and verify that the configuration settings are the same.**

Procedure—PC Users—Parallel and Serial

Use the following procedure to update the system software in flash memory whether downloading through the parallel or serial port.

Decompressing the System Software

Before the printer system software can be downloaded, it must be decompressed on your PC's hard disk.

1 **Create a new directory on your PC.**

2 **Change to this directory.**

3 **Insert the printer system software disk in your PC's 3.5" disk drive.**

4 **Type *x*:pkunzip *x*:system↵ where *x* is the name of the disk drive in which you inserted the system software disk.**

5 **Follow the prompts.**

They instruct you to insert the system software disks in the following order:

a Last disk (system software disk 2)

b Disk 1 (system software disk 1)

c Disk 2 (system software disk 2)

6 **Turn on the printer, wait for IDLE to appear in the message window, and then print an advanced status page.**

The advanced status page provides a record of all current configuration settings, so you can verify that they are the same after the system software has been updated.

Downloading the System Software—Parallel

1 **Access the Administration/Miscellaneous/New Flash Image menu.**

2 **Select Yes in the New Flash Image menu.**

The printer automatically reboots and waits for the new system software (image) to be sent via your PC's parallel port.

3 Send the new image to the printer.

- Type the following:

```
copy /b *.dl lpt#↵
```

where # is 1 to 3. (/b refers to binary files.)

4 After the updated system software has been written to flash ROM, the printer returns to IDLE.

» Note: The new flash image will not erase the old image until the printer verifies that the new image is valid.

5 Restart the printer to activate the new system software.

6 Print another advanced status page, and verify that the configuration settings are the same.

Downloading the System Software—Serial

1 Connect the serial cable to the printer.

2 Download the DOS MODEX program available from the QMS Bulletin Board.

Using your modem, dial the QMS Bulletin Board as described in Appendix A, "QMS Customer Support." Access the QMS Main Library through the L (Library of Files) selection, then do the following:

a Choose D ... Download a file

b Type hibaud.exe↵

c Exit the bulletin board

d Terminate the connection

3 Type hibaud↵ to extract the MODEX files.

4 Set the PC's baud rate to 38400 by typing the following:

```
modex.exe↵
modex # 38400 n 8↵
```

(where **#** is 1 to 3) See the MODEX.DOC file for more information on this program.

5 Access the Administration/Communication/Serial menu and set the Hardware Flow Control RTS and CTS values to On, press the Online/offline or Menu key and select yes to Save Changes.

6 Access the Administration/Miscellaneous/New Flash Image menu.

7 Select Yes in the New Flash Image menu.

The printer automatically reboots and waits for the new system software (image) to be sent via your PC's serial port (YES remains in the message window until the new image is sent).

Type the following:

```
copy /b *.dl com#
```

where # is 1 to 4. (/b refers to binary files.)
The Downloading process takes about 15 minutes depending on the size of the file and the speed of your computer. The Ready LED blinks as the new system image is copied to the printer.

8 After the updated system software has been written to flash ROM, the printer returns to IDLE.

» *Note: The new flash image will not erase the old image until the printer verifies that the new image is valid.*

9 Restart the printer to activate the new system software.

10 Print another advanced status page, and verify that the configuration settings are the same.

❖

A

QMS Customer Support

In This Chapter . . .

- Sources of customer support
- QMS world-wide offices

Sources of Support

Several sources of help and information are available, depending on the type of help you need:

Your QMS Vendor

Your local vendor (the one from whom you bought the printer) may be best equipped to help you. Your vendor has specially trained service technicians available to answer questions, and the equipment to analyze your printer problems.

Your Application Vendor

Often, “printing” problems have more to do with the application being used than with the printer. In this case, the application manufacturer is the best source of help.

Q-FAX

Q-FAX, a QMS information retrieval service, provides application notes, technical support notes on common printing problems, and information about printer specifications, options, accessories, consumables, and prices.

In the United States and Canada, call (800) 633-7213 to reach Q-FAX. In all other countries, call (334) 633-3850. Have your fax number handy when you call (or place the call from your fax machine's handset).

You can choose to have either a directory (a list of currently available documents on a particular topic) or a specific document sent to you. The first time you call, request the directory (press 2 on your phone or fax keypad when prompted). Then call back to request specific documents. You can order up to three documents per call.

The QMS Corporate Bulletin Board System

The QMS Corporate Bulletin Board System (BBS) contains technical support notes, application notes, drivers, patches, and utilities. Technical questions not requiring an immediate response can be left on electronic mail for the Sysop (System Operator).

The bulletin board [(334) 633-3632] operates at 1200, 2400, 9600, and 14400 baud, 8 data bits, no parity, 1 stop bit, with XMODEM, YMODEM, and ZMODEM capabilities. Contact QMS Customer Technical Assurance for more information about the bulletin board.

CompuServe

Through CompuServe, you can ask general (non-technical) questions, share information with other users, and access printing information and programs. When you use CompuServe, type the following command:

- `go qmsprint` takes you to the forum where QMS is located.

The QMS library section contains application notes, printer drivers, utilities, technical information, and announcement files.

Internet

The QMS server provides access to technical reports, new product announcements, a trade show schedule, and other general information about QMS.

You can access the QMS server via any one of the many web viewers available to Internet users. If you don't have access to a web viewer, we recommend the NCSA Mosaic web viewer (Mosaic is at ftp.ncsa.uiuc.edu). The QMS home page is at http://www.qms.com/. The QMS ftp resource is ftp.qms.com.

QMS Customer Technical Assurance (CTA)

QMS Customer Technical Assurance is available M-F, 7:00 am-6:00 pm, Central Standard Time, at (334) 633-4500 (US). You can also fax questions to CTA at (334) 633-3716 (US). Please indicate whether you would like a fax or a phone call.

If you call for assistance, have the following information ready so our technicians can help you more quickly:

- Your phone number, fax number, and shipping address
- A description of the problem
- The printer model and serial number
- The type of host computer you are using
- The type and version of operating system you are using
- The interface you are using, and, if serial, the protocol
- The application and version you are using
- The emulation you are using
- Your printer firmware version (listed on the status and start-up pages)

QMS National Service

The following numbers are valid in the US. To contact QMS in other countries, see the list of world-wide offices inthe following section.

(800) 762-8894	Call for service information and maintenance pricing for repair of all QMS printers and printers of various other manufacturers.
(800) 858-1597	On-Site Service and Depot Repair Information 7:00 am -7:00 pm, Central Standard Time
(334) 633-4300	Spare Parts Ordering and Information 8:00 am - 5:00 pm Central Standard Time

QMS World-wide Offices

United States/ Latin America	QMS, Inc. One Magnum Pass Mobile, AL 36618 (334) 633-4300 Product Information: (800) 523-2696 OEM Information: (800) 631-2692 Consumables: (800) 777-7782 Fax: (334) 633-4866 E-mail: info@qms.com Latin America Fax: (334) 639-3347
Asia-Pacific	QMS Asia-Pacific Auckland 64 (9) 630 7912 Melbourne 61 (3) 899 5777 Sydney 61 (2) 901 3235 Tokyo (81) (3) 3437 4030
Canada	QMS Canada, Inc. 9630 Rte. Trans-Canadienne Saint-Laurent, Québec H4S 1V9 Telephones: (514) 333-5940, (800) 361-3392 Fax: (514) 333-5949 National Service: (800) 268-4969 National Service Fax: (905) 673-7676 Offices in Ottawa, Québec City, Toronto, and Vancouver
Europe, Middle East, Africa	Düsseldorf (49) 211/596 1333 London (44) 1 784 442255 Maarssen (31) 3465 51 333 Paris (33) (1) 4107 9393 Stockholm (46) (8) 725 5680

❖

B

Technical Specifications

In This Chapter . . .

- Print engine specifications
- Controller characteristics
- Electrical and environmental requirements
- Physical characteristics
- Print media specifications
- Optional hardware
- Printer options and consumables
- Cable pinouts
- Warranty considerations

Print Engine Specifications

Engine	Canon P170
Duty Cycle (maximum)	75,000 pages per month
Print Method	Laser beam scanning and dry electrophotographic printing; fixing by heated rollers
Print Speed	Up to 17 pages per minute using letter or A4 paper Up to 7.5 double-sided pages per minute using letter paper size » Note: Actual print speed depends on the host application
Resolution	300x300 dpi 600x600 dpi
Toner	Microfine toner designed especially for high-resolution printers (EP-N cartridge); dry, single component in user-replaceable cartridge
Toner Cartridge Life	8,000 pages at normal (5%) page coverage, letter or A4 paper
Warm-Up Time	Less than 5 minutes from cold start

Controller Specifications

Emulations	PostScript—Level 1 compatibility mode and Level 2 HP PCL 5 HP-GL 7475A/7550A Lineprinter CCITT Support for downloadable optional emulations
Fonts	39 resident PostScript fonts that can be scaled from 4 points upward and rotated to any angle in 1° increments; all typefaces have multilingual character sets 7 resident bitmap HP PCL fonts in 25 symbol sets, 12 resident scalable HP PCL fonts in 35 symbol sets, and 1 resident scalable HP PCL font in 5 symbol sets, all of which can automatically be rotated to landscape orientation 40 resident HP-GL symbol sets Support for Type 1 and Type 3 host-resident downloadable and printer-card-resident PostScript fonts Support for Type 42 (PostScript format) host-resident downloadable TrueType fonts
Interfaces	Centronics/IEEE 1284, RS-232 (serial), and Ethernet interfaces Support for optional interfaces Support for optional SCSI hard disks (one internal hard disk and 3 external SCSI hard disks)
Memory	8 MB RAM standard, upgradable to 64 MB 4 MB System Flash ROM 2 MB Font PROM/Mask ROM
Type	IDT 3081E RISC microprocessor operating at 33 MHz

Electrical Requirements

Frequency	50/60 Hz (± 2 Hz)
Power Requirements	100/110/120v 50/60 Hz (about 90-130 VAC) or 220/240v 50 Hz (about 200-260 VAC)

Environmental Requirements

Noise Level	Idle; less than 50 dB (A) Printing; less than 60 dB (A)
Ozone Density	The printer emits less than 0.1 ppm maximum with a 100% duty cycle under 8 hours of continuous operation
Relative Humidity	Printing: 20-80% RH (non-condensing) Storage: 35-85% RH (non-condensing)
Temperature Range	Printing: 50-90° F (10-32.5° C) Storage: 32-95° F (0-35° C)
Atmospheric Pressure	570-760 mm Hg

Physical Characteristics

Dimensions	WxDxH 17.8" x 22.4" x 19.0" 454 mm x 570 mm x 483 mm
Weight	Approximately 97 lbs (44 kg) without cassettes and 106 lbs (48 kg) with cassettes installed

Print Media

Delivery	Face down; about 500 sheets of 20 lb (75 g/m^2) paper Face up; about 100 sheets of 20 lb (75 g/m^2) paper
Feed	Paper cassettes (2) About 500 sheets of 20 lb (75 g/m^2) paper per cassette. Optional High-Capacity Feeder (1500-sheets) is also supported.
Loading	Cut-sheet paper from cassette or manual feed, envelopes from upper cassette manual feed slot or power feeder, labels and transparencies from upper or lower manual feed slots,
Sizes	(See “Print Media Sizes,” below)
Types	Cut-sheet paper, transparencies, labels and envelopes We do not recommend printing on perforated paper (including 3-hole-punched paper)
Weight	Paper (cassette): 17-24 lb (64-90 g/m^2) Transparencies (manual feed): 17-34 lb (64-128 g/m^2) Labels (manual feed): 17-34 lb (64-128 g/m^2) Envelopes: 24 lb (90g/m^2)

Print Media Sizes

Media	Media Size		Imageable Area	
	Inches	**Millimeters**	**Inches**	**Millimeters**
A4	8.27x11.69	210.06x296.93	7.92x11.38	201.38x289.22
Executive	7.25x10.50	184.15x266.70	6.94x10.16	176.44x258.06
Legal Letter	8.50x14.00 8.50x11.00	215.90x355.60 215.90x279.40	8.18x13.66 8.16x10.69	207.94x346.96 207.26x271.61

Envelopes

	Minimum Size	Maximum Size
Manual feed	3 3/8" x 7" (86 mm x 178 mm)	7 2/5 x 10 1/2 (188 mm x 267 mm)
Power feed (Requires optional envelope feeder)	3 7/8 x 7 1/2 (98.4 mm x 190.5 mm)	4 1/3 x 9 1/2 (110 mm x 241.3 mm)

Optional Hardware

Paper Handling

Duplexer assembly	Optional kit that allows printing on both sides of paper
Envelope feeder	Optional bin for power envelope feeding
Media cassettes	Optional cassettes: 500-sheet and 1500-sheet high capacity feeder

Hard Disks

Internal SCSI Hard Disk	Mounting space and connectors for one internal SCSI hard disk are present
External SCSI Hard Disks	There are subtle differences in the command sets of SCSI hard disks from different vendors; therefore, not all SCSI hard disks are compatible with this printer. With an internal SCSI hard disk installed, up to 3 external hard disks may be added. Without an internal SCSI hard disk installed, up to 4 external SCSI hard disks may be added. Q-Fax, the QMS retrieval service, provides current information on hard disks available for this printer. See appendix A for information on using this service.

Consumable Supplies

Cassettes	**Size**	**Capacity**
	A4	500 sheets
	Legal	500 sheets
	Letter	500 sheets
	Letter	1500 sheets
Media—Sizes	See “Print Media Sizes,” earlier in this chapter	
Media—Recommended Brands	**Paper**	**Plain**—Xerox 4024
		Laser—Hammermill Laser Print
	Labels	Avery 5260
	Transparencies	Canon brand type D 3-M type PP2500
	Envelopes	Com#10, Monarch
Toner	EP-N toner cartridge	

Cable Pinouts

Centronics/IEEE 1284 Parallel

This table gives the correct pinouts for the printer end of the Centronics/IEEE 1284 parallel cable used to connect your printer to a computer.

Signal Pin No.	Signal Description	Direction
1	Strobe-	In
2	Data 1	InOut
3	Data 2	InOut
4	Data 3	InOut
5	Data 4	InOut

6	Data 5	InOut
7	Data 6	InOut
8	Data 7	InOut
9	Data 8	InOut
10	Acnlg-	Out
11	Busy+	Out
12	Pe+	Out
13	Select	Out
14	Autofeed	In
15	Reserved	-
16	Ground	-
17	Ground	-
18	Vcc Test	-
19-30	Ground	-
31	Iprime	In
32	Fault-	Out
33	Reserved	-
34	Reserved	-
35	Reserved	-
36	Selectin	In

Notes to the Table

Direction refers to the direction of signal flow as viewed from the printer.

Return denotes “twisted-pair return” and is to be connected at signal-ground level. When wiring the interface, be sure to use a twisted-pair cable for each signal and never fail to complete connection on the return side. To prevent noise effectively, these cables should be shielded and connected to the chassis of the system unit and printer, respectively.

All interface conditions are based on Transistor-Transistor Logic (TTL) level. Both the rise and fall times of each signal must be less than 0.2 microseconds.

Data transfer must be carried out by recognizing the ACKNLG or BUSY signal.

The cable must have an overall braided shield, Belden 8345 or equivalent.

» Note: Connectors must have shielded housings. The overall shield must be bonded to the shielded housings at both ends of the cable.

Serial

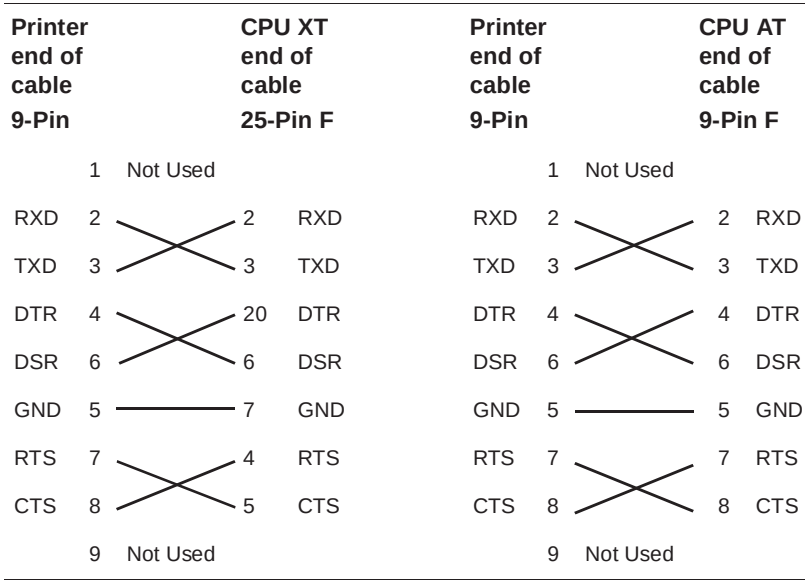
This table gives the pinouts for the 9-pin RS-232 interface port.

Pin	Name
1	Not Used
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Signal Ground (GND)
6	Data Set Ready (DSR)
7	Ready To Send (RTS)
8	Clear To Send (CTS)
9	Reserved

IBM PC/XT, PC/AT, and Compatible Computers

This diagram gives the suggested cable pinouts for IBM PC/XT, PC/AT, and compatible computers

» Note: Not all serial cables are configured as shown and may require an additional null-modem adapter. Check with your cable vendor for compatibility.

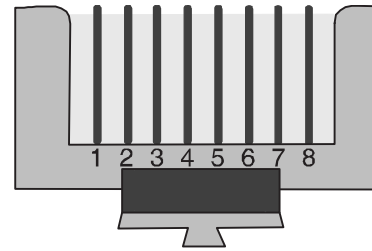

Printer end of cable 9-Pin
CPU XT end of cable 25-Pin F
Printer end of cable 9-Pin
CPU AT end of cable 9-Pin F
1 Not Used
RXD 2 2 RXD
TXD 3 3 TXD
DTR 4 20 DTR
DSR 6 6 DSR
GND 5 7 GND
RTS 7 4 RTS
CTS 8 5 CTS
9 Not Used
1 Not Used
RXD 2 2 RXD
TXD 3 3 TXD
DTR 4 4 DTR
DSR 6 6 DSR
GND 5 5 GND
RTS 7 7 RTS
CTS 8 8 CTS
9 Not Used

» Note: To download printer system software via the serial port, your hardware must have RTS and CTS support. Make sure that pins 4 and 5 on the 25-pin serial cable and pins 7 and 8 on the 9-pin serial cable are criss-crossed as shown in this diagram.

Ethernet

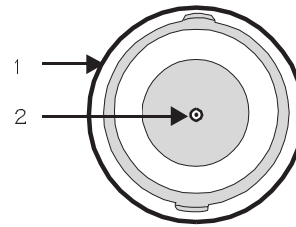
10BaseT

These are the pinouts for the 10BaseT Ethernet cable:

Pin	Name	(View from front of the connector)
1	Transmit Data +	
2	Transmit Data -	
3	Receive Data +	
4	No Contact	
5	No Contact	
6	Receive Data -	
7	No Contact	
8	No Contact	

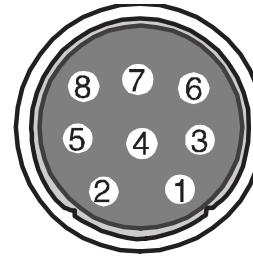
10Base2 BNC

These are the pinouts for the 10Base2 BNC Ethernet cable:

Pin	Name	(View from front of the connector)
1	Ground	
2	Signal	

LocalTalk (Optional Interface)

These are the pinouts for the optional 8-pin LocalTalk cable:

Pin	Name	(Pinout view from front of connector)
1,2,7	Reserved	
3	Transmit Data - (TXD)	
4	Signal Ground (GND)	
5	Receive Data - (RXD)	
6	Transmit Data + (TXD)	
8	Receive Data + (RXD)	

Macintosh to Serial

These are the pinouts for a cable connecting the Macintosh printer or modem port to the printer's serial port:

» Note: To download printer system software from a Macintosh, you must have this type cable.

To Macintosh DB-9 Female			To Printer Din-8 Male	
HandshakeOut	1		7	RTS
HandshakeIn	2		8	CTS
TXD-	3		3	TXD
RXD-	5		2	RXD
GND,RXD+	4,8*		5	GND
	6	~~Not Used~~		
	7	Not Used		

* Pins 4 and 8 must be connected together on the Din-8.

Warranty Considerations

Various factors can affect a printer's warranty. Two important ones are consumables and electrostatic discharge. Read your printer warranty carefully, and then store it in a safe place.

Consumables and Your Warranty

The use of non-QMS consumables and/or accessories alone does not affect either your warranty or any maintenance contract you may have purchased. However, if QMS printer failure or damage is found to be directly attributable to the use of non-QMS consumables and/or accessories, QMS will not repair the printer free of charge. In this case, standard time and material charges will be applied to service your printer for that particular failure or damage. QMS recommends that you use only QMS consumables and accessories to support your printer. To order QMS consumables and accessories in the US, call (800) 777-7782. In all other countries, check appendix A, "QMS Customer Support," for the QMS office closest to you.

Electrostatic Discharge and Your Warranty

Electrostatic discharge can destroy circuit boards, such as a SIMM or your printer's controller board. To prevent this, use an anti-static wristband.

To use an anti-static wristband, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in **but turned off**). **Never attach the wrist strap to any piece of equipment with an electrical current present**. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you remove you can access the printer's controller board.

If you don't have an anti-static wrist strap, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the con-

troller board cover. Redischarge your body each time after walking around and before touching the printer controller board again. Handle the tray carefully, and try to handle it by the edges only.

Incidental and consequential damages caused by not discharging electrostatic buildup can affect your printer warranty.

❖

C

Document Option Commands

In This Chapter . . .

- Supported Document Option Commands (DOCs)
- Updated PLC 5 DOCs
- CCITT commands

Introduction

This appendix lists the supported Document Option Commands (DOCs) for your QMS 1725E Print System. The commands are grouped by feature type.

Each command is preceded by either a DOC statement (%%) or an IncludeFeature statement (%%IncludeFeature). See the *QMS Crown Document Option Commands* manual for information on how to use each command.

This appendix also provides updated information on HP PCL 4 and PCL 5 DOCs, as well as a listing of CCITT commands.

Supported DOCs

Header/Trailer Page Commands

Print document creator%%Creator:
Print creation date and time%%CreationDate:
Print copyright statement%%CopyRight:
Print current date%%Date:
Print header page%%IncludeFeature:header
Print document host%%Host:
Print document owner%%For:
Print document title%%Title:
Print trailer page%%IncludeFeature:trailer
Print routing information%%Routing:
Print version and revision%%Version:

HP-GL Emulation Commands

Expand plot%%IncludeFeature:expand
Scale the image%%IncludeFeature:scaling
Select enhanced resolution%%IncludeFeature:enhanced
Select original paper size%%IncludeFeature:size

Select pen width and color%%IncludeFeature:pen
Select plotter%%IncludeFeature:plotter
Shift the origin%%IncludeFeature:origin
Reverse image%%IncludeFeature:reverse

HP PCL 5 Emulation Commands

Enable scalable fonts%%IncludeFeature:scalablefonts*
Establish the current resource%%IncludeFeature:install*
and default object ID value
Remove an external object%%IncludeFeature:remove*
%%IncludeFeature:removeresource*
Reset to PCL defaults%%IncludeFeature:reset
Retain temporary macros/fonts%%IncludeFeature:retaintemporary
Select default font%%IncludeFeature:font*
Select default font ID%%IncludeFeature:fontid*
Select monochrome%%IncludeFeature:monochromegl
Select symbol set%%IncludeFeature:symbolset*
Set carriage return to CR+LF%%IncludeFeature:criscrlf*
Set linefeed to CR+LF%%IncludeFeature:lfiscrlf*
Set number of lines per inch%%IncludeFeature:linesperinch*
Set number of lines per page%%IncludeFeature:linesperpage*
Set point size %%IncludeFeature:pointsize*
Store fonts to disk%%IncludeFeature:resource*

* Indicates a DOC about which updated information is provided in the following section, “Updated DOCs.”

Lineprinter Emulation Commands

Number lines%%IncludeFeature:number
Retain temporary macros/fonts%%IncludeFeature:retaintemporary
Select font for current job%%IncludeFeature:font
Set carriage return to CR+LF%%IncludeFeature:criscrlf
Set formfeed to CR+LF%%IncludeFeature:ffiscrlf
Set point size for current job%%IncludeFeature:pointsize
Set linefeed to CR+LF%%IncludeFeature:lfiscrlf
Set margins%%IncludeFeature:lpmargins
Set number of lines per page%%IncludeFeature:linesperpage

Set orientation%%IncludeFeature:lporientation
Set tabs%%IncludeFeature:tabs
Specify character map type%%IncludeFeature:map
Wrap lines%%IncludeFeature:autowrap

PostScript Emulation Commands

Select PostScript level%%IncludeFeature:languagelevel

Printer Commands

Collate print jobs%%IncludeFeature:collate
Select emulation%%IncludeFeature:emulation
Select paper%%IncludeFeature:input
Select number of copies%%IncludeFeature:numcopies
Select orientation%%IncludeFeature:orientation
Select output bins%%IncludeFeature:output
Set printer resolution%%IncludeFeature:resolution

Updated DOCs

This section provides updated information on HP PCL 4 and PCL 5 DOCs. This information will be merged into the appropriate manuals as they are revised. But until then, it supersedes the following:

- *QMS Crown Document Option Commands* manual (part number 1800216-001E)
- *HP PCL 5 Emulation Technical Reference Manual* (part number 1800304-001A)

PCL 5 Emulation Terminology

Font

A font is a unique set of objects that has an ID and attributes (symbol set, spacing, pitch, height, style, weight, and typeface number). A font

is accessed by specifying a desired set of attributes. The system selects the font that most closely matches these attributes from the available set of fonts. See the *PCL 5 Emulation Technical Reference Manual* for information on what characterizes a PCL font.

There are two types of fonts—bound and unbound. A bound font supports a single symbol set. An unbound font supports multiple, but not all, symbol sets. With unbound fonts, the symbol sets are organized into two groups—normal and Dingbats. All downloaded fonts are bound, and all resident fonts (except Zapf-Dingbats which supports the Dingbats symbol set) support the group of normal symbol sets.

In the QMS PCL 5 emulation, only fonts located in the current resource may be accessed by a PCL font ID using the normal <ESC>(#X sequence. All other fonts (resident, cartridge, or other), including those stored on the additional resources, can be accessed only by attributes.

Also, only objects stored in the current resource may be deleted directly by the PCL language. Therefore, unless they are explicitly removed, external fonts are always available to all PCL jobs.

Font Index Number

In addition to its ID, a downloaded font also has an unique index number that is automatically assigned by the printer when the font is downloaded. This index number may change if new resources are added, but in practice it usually remains fixed. All currently available PCL fonts (resident, cartridge, temporary, permanent, and external) are listed with their font index numbers on the Advanced Status Page.

The font index number defines the default PCL font to be used if selectbyid is specified as the default PCL font. Do not confuse the font index with the PCL font ID, a mechanism used to identify downloaded fonts in the PCL language using the <ESC>(#X sequence. There is no way to specify fonts by their font index numbers from within the PCL language. Only the default PCL

font is affected.

Object

There are three types of PCL downloaded objects:

- Temporary

  Temporary objects reside on the current resource and they are deleted either at the beginning and end of a job (unless Retain Temporary is set to On or On Compatibility) or when the system is reset (<ESC>E or receipt of Printer Job Language).

- Permanent

  Permanent objects reside on the current resource and are retained when the system is reset (<ESC>E or receipt of Printer Job Language).

- External

  External objects reside on the additional resources.

All objects are temporary when first created. They can be made permanent objects through PCL commands. Both temporary or permanent objects can become external objects when the current resource is changed (for temporary objects Retain Temporary must be set to On, True, or On Compatibility). External objects become permanent when the resource in which they reside becomes the current resource.

User-downloaded PCL objects (with the exception of palettes) are identified by an ID when they are downloaded. The ID is usually set by the file performing the download. If not, the system will provide a default value (normally 0, but this can be set using the **%%IncludeFeature:install** DOC). If two objects of the same type are provided with the same ID, the last one received replaces the former. From that point on, downloaded objects are accessible by their IDs.

Resource

A resource is a location where downloaded objects such as fonts, macros, and patterns are stored. The printer has one default resource and one additional resource for each attached hard disk. All down-

loaded objects are stored in file systems which reside on these resources. The RAM1: resource may be used as the default, but systems with at least one hard disk use the system disk instead. So, for any hard disk-equipped printer, all downloaded objects (except palettes, which require special handling) are stored on disk. The default resource and one of the additional resources can reside on the same hard disk, but they will be located in different directories of that resource's file system.

Updated PCL 5 DOCs

Disable Scalable Fonts Command

Syntax	%%IncludeFeature:scalablefonts(*value*)	
Purpose	Enables/disables PCL 5 scalable fonts.	
Variable	value	
	Purpose	Specifies whether to disable scalable fonts.
	Range	0—Enables scalable fonts 1—Disables scalable fonts
	Default	0
Notes	Disable scalable fonts to ■ Print PCL 4 documents which have selected PCL 5 scalable fonts. ■ More closely emulate the PCL 4 font environment.	

Install Object Command

Syntax	**%%IncludeFeature:install**(***resource id object id***)	
Purpose	Establishes the current resource and the default object ID value for the current job to which it is attached. If it is attached to a job that downloads a font without setting the current object ID using the PCL escape sequence <ESC>(#X, it has the appearance of “storing” the font on disk.	
Variables	resource id	
	Purpose	Identifies one of the possible locations for downloaded objects.
	Range	0 to 6
	Default	Internal system disk
	Format	Integer
	Notes	If no **%%IncludeFeature:install** DOC command is sent, the internal default location is used; otherwise, this parameter, which must be provided, specifies one of the alternate locations. For most QMS printers, resource 6 is the internal system disk.

	object id	
	Purpose	Assigns an ID to an object, such as a font, macro, or pattern.
	Range	0-32767
	Default	0
	Format	Integer
	Notes	The object ID can be used instead of the usual PCL command to assign an ID. This ID is overwritten by any ID assigned from the PCL print job, if present. If neither a DOC command nor the PCL print job specify an ID, the default ID of 0 is used. Identifiers must be unique. If the ID matches an ID for an existing object, that object is deleted and replaced by the new object. If a **%%IncludeFeature:remove** command precedes a **%%IncludeFeature:install** command, the **install** command is ignored (these two commands are mutually exclusive).
Notes	All downloaded objects are by default temporary and will be deleted at the end of a job unless Retain Temporary is set to On or On Compatibility. If the file the **%%IncludeFeature:install** command is attached to does not make its downloaded fonts permanent or Retain Temporary is not set, then those objects are removed from the disk when the job completes. A downloaded font can be accessed only by its ID if the font is stored in the current resource. Regardless of its resource, a font can be selected by its attributes. Example A shows a pair of jobs that will not produce the desired results (subjob 2 has only the appearance of storing the font on disk). By contrast, examples B and C show a pair of jobs that will produce the desired results.	
Examples	Example A—Job 1	%! %%IncludeFeature:emulation(pcl5) install(6 20) %%EndComments <ESC>)s#W<<*download font header*>><ESC>*c33E <ESC>(s#W<<*char 33 data*>><ESC>*c34E <ESC>(s#W<<*char 34 data*>>... <ESC>*c5F
	Example A—Job 2	<ESC>(20X*this text is NOT in the downloaded font...*

Example B—Job 1	%! %%IncludeFeature:emulation(pcl5) install(6 20) %%EndComments <ESC>)s#W<<download font header>><ESC>*c33E <ESC>(s#W<<char 33 data>><ESC>*c34E <ESC>(s#W<<char 34 data>>. <ESC>*c5F
Example B—Job 2	<ESC>(8U<ESC>(s1p12v0s0b4153This text will be in the downloaded font, if it supports the ROMAN-8 symbol set, is proportionally spaced, 12 points in height (or scalable), upright, medium weight, and has type # 4153.
Example C—Job 1	%! %%IncludeFeature:emulation(pcl5) install(6 20) %%EndComments <ESC>)s#W<<*download font header*>><ESC>*c33E <ESC>(s#W<<*char 33 data*>><ESC>*c34E <ESC>(s#W<<*char 34 data*>>... <ESC>*c5F
Example C—Job 2	%! %%IncludeFeature:emulation(pcl5) install(6) %%EndComments <ESC>*(20Xthis text is also in the downloaded font...)*

Remove Object Command

Syntax	**%%IncludeFeature:remove**(***resource id object id object type***)	
Purpose	Removes an external object from the printer system.	
Variables	object type	
	Purpose	Specifies the kind of objects that are to be deleted from the specified printer system.
	Range	*, font, macro, pattern, or other object type
	Default	N/A
	Format	Character
	Notes	If ***object type*** is * or is not specified, then all objects on the specified resource with the specified object id are removed.

	object id	
	Purpose	Specifies the ID of the object that is to be removed from the printer system.
	Range	*, -1 to 32767
	Default	-1 (wildcard)
	Format	Integer
	Notes	If the ***object id*** is not specified, or if it is specified as * or -1, all objects on the specified resource are removed.
Notes:	Unlike the **%%IncludeFeature:install** command, the **%%IncludeFeature:remove** command does not set any defaults, and it is not directly related to the job to which it is attached. This command allows you to remove external objects from the system without having to generate a job containing both the DOC command to set the appropriate current resource and the PCL code to delete the desired object. If this command is specified more than once, the last command received is the one that will be executed. In the following example, the **remove(6 5 font)** command is executed, and the r**emove(6 1 macro)** command is ignored: **%%IncludeFeature:remove(6 1 macro) remove(6 5 font)**	

Remove Resource Command

Syntax	**%%IncludeFeature:removeresource**(***resource id object id***)	
Purpose	Identifies an external object that is to be removed from the printer system.	
Notes	This is an obsolete DOC command that is identical to the remove command, except that it does not allow specification of an object type. The DOC string “removeresource(aaa bbb)” is equivalent to “remove(aaa bbb *)”.	
Variables	resource id	
	Purpose	Indicates the resource from which the object is to be removed.
	Range	0-6
	Default	N/A
	Format	Integer
	Notes	This ID must be specified. It indicates the resource from which the desired object is to be removed. There is no way to specify “all resources.” If a **%%IncludeFeature:install** command precedes the **%%IncludeFeature:remove** command, the **remove** command is ignored (these commands are mutually exclusive). If the disk does not exist, PCL issues the `NO SPACE FOR FONT, MACRO, OR PATTERN` error message.
	object id	
	Purpose	Specifies the ID of the object that is to be removed from the printer system.
	Range	*, -1 to 32767
	Default	-1 (wildcard)
	Format	Integer
	Notes	If the object id is not specified, or it is specified as * or -1, all objects on the specified resource with the specified object type are removed.

Resource Command

Syntax	%%IncludeFeature:resource*(resource id object code)*	
Purpose	Establishes the current resource and the default object code value for the current job to which it is attached.	
Notes	This command is identical to the **%%IncludeFeature:install** DOC. It is included for backward compatibility. All downloaded objects are by default temporary, and will be deleted at the end of a job unless Retain Temporary is set to on, true, or on compatibility. If the file that the **%%IncludeFeature: resource** command is attached to does not make the downloaded font permanent and Retain Temporary is not set, then those objects are removed from the disk when the job completes. A downloaded font can only be accessed by its ID if the font is stored in the current resource. Regardless of its resource, a font can be selected by its attributes.	
Variables	***resource id***	
	Purpose	Identifies one of the possible locations for downloaded objects.
	Range	0-6
	Default	Internal system disk (usually DSK6:/BIN/EMULATE/PCL/FONTS)
	Format	Integer
	Notes	If no resource item is provided, the internal default location is used; otherwise, this parameter, which must be provided, specifies one of the alternate locations. For most QMS printers, resource 6 is the internal system disk.
	object code	
	Purpose	Assigns a code to an object such as a font, macro, or pattern.
	Range	0-32767
	Range	0
	Format	Integer

Select Font Command

Syntax	%%IncludeFeature:font (*font name*)	
Purpose	Specifies the default font to use.	
Notes	Fonts are identified by the names shown above. Only the resident fonts may be selected (the available set varies from printer to printer). An asterisk * in the name indicates that a font is scalable, and that a point size is to be applied. The value selectbyid indicates that the default font ID or unique font index will be used for default font selection. Selecting a bound, bitmap font overrides the default settings for symbol set and point size. An unbound font uses the specified default symbol set if possible, while a scalable font uses the default font size.	
Variable	***font name***	
	Purpose	Specifies the default font name.
	Range	courier12times*blditalic courier12bolduniv* courier12italicuniv*italic courier10univ*bold courier10bolduniv*blditalic courier10italicunivcond* lineprinterunivcond*italic times*univcond*bold times*italicunivcond*blditlc times*boldselectbyindex
	Default	Depends on printer configuration
	Format	Character

Select Font Index Command

Syntax	%%IncludeFeature:fontid *(index #)*
Purpose	Specifies the default font index number.

Notes	This index is used when the Default Font selected is selectbyid. This allows for selection of fonts only on the current resource. Selection of default font by index overrides the symbol set value. The symbol set is overridden if a bound font is selected as the default or if an unbound font is selected that does not support the default symbol set. If a font with the specified index exists, it is selected as the Default Font. If the specified value does not exist, courier 12 point is substituted.	
Variable	index #	
	Purpose	Specifies the index number of the default font.
	Range	0 to 32767
	Default	Selectbyid-dependent
	Format	Integer

Select Symbol Set Command

Syntax	%%IncludeFeature:symbolset *(name)*	
Purpose	Specifies the default symbol set for the emulation.	
Notes	This command specifies the default symbol set. Not all symbol sets are available with certain resident fonts. In particular, the Desktop, PS Math, Math 8, Microsoft Pub, Pi Font, PS Text, Ventura Intl, Ventura Math, Ventura US, and Windows symbol sets cannot be used with the resident bitmap fonts: courier10, courier10bold, courier10italic, courier12, courier12bold, courier12italic, and lineprinter. The five dingbat symbol sets (PS-Zapf-Dingbats, Ventura-Dingbats, Zapf-Dingbats100, Zapf-Dingbats200, and Zapf-Dingbats300) can be used with all fonts. If a mismatch between symbol set and font occurs, the standard PCL font selection mechanism is used to locate a font that matches the selected symbol set. With the standard set of fonts distributed by QMS, this matches the Times* font, but other user installed fonts could change this result.	
Variable	name	
	Purpose	Specifies the symbol set name.

	Range	roman-8iso-60 pc-850iso-61 pc8-usiso-69 pc8-dniso-84 ecma-94iso-85 legaldesktop hpgerman ps-math hpspanishmath8 iso-2microsoft-pub iso-4pi-font iso-6ps-text iso-10ventura-intl iso-11ventura-math iso-14ventura-us iso-15windows iso-16ps-zapf-dingbats iso-17ventura-dingbats iso-21zapf-dingbats100 iso-25zapf-dingbats200 iso-57zapf-dingbats300
	Default	N/A
	Format	Character

Set Carriage Return (Line Termination)

Syntax	%%IncludeFeature:criscrlf*(value)*	
Purpose	Controls the default line termination mode (the ***<ESC>&k#G*** command). Specifies the line termination treatment of a carriage return.	
Variable	value	
	Purpose	Specifies whether a carriage return is treated simply as a carriage return, or as a carriage return-line feed combination.
	Range	Off/false—Treat line feed as a line feed. On/true—Treat line feed as a carriage return-line feed combination.
	Default	Printer configuration dependent
	Format	Boolean

Notes	The result of various settings for these parameters is shown in table below, in terms of the equivalent code passed to the PCL line termination command (***<ESC>&k#G***). The second setting (lfiscrlf on, criscrlf off) is correct for most ASCII listings printed from UNIX machines. PC listings should usually be done with both items set to off, and Macintosh listings usually require the third setting (lfiscrlf off, criscrlf on). The following table shows the criscrlf/lfiscrlf commands and the corresponding PCL Line Termination command parameters.

LFISCR	LFCRISCR	LFPCL Code	Comments
Off	Off	0	CR→CR,LF→LF,FF→FF
On	Off	2	CR→CR,LF→CR-LF,FF→CR-FF
Off	On	1	CR→CR-LF,LF→LF,FF→FF
On	On	3	CR→CR-LF,LF→CR-LF,FF→CR-FF

Set Linefeed (Line Termination)

Syntax	%%IncludeFeature:lfiscrlf *(value)*	
Purpose	Controls the default line termination mode (the ***<ESC>&k#G*** command); specifies the line termination treatment of a linefeed.	
Variable	value	
	Purpose	Specifies whether a linefeed is treated simply as a linefeed or as a carriage return-linefeed combination.
	Range	Off/false—Treats linefeed as a linefeed. On/true—Treats linefeed as carriage return-linefeed combination.
	Default	Printer configuration dependent

Format	boolean
Notes	The result of various settings for these parameters is shown in the table included in the Set Carriage Return (Line Termination) discussion, in terms of the equivalent code passed to the PCL line termination command. The second setting (lfiscrlf on, criscrlf off) is correct for most ASCII listings printed from UNIX machines. PC listings should usually be done with both items set to Off, and Macintosh listings usually require the third setting (lfiscrlf Off, criscrlf On). Note that the FF becomes a CR-FF when the LF is a CR-LF.

Set Lines Per Inch Command

Syntax	%%IncludeFeature:linesperinch *(# x 100)*	
Purpose	Sets the default PCL line spacing.	
Notes	The **%%IncludeFeature:linesperinch** DOC affects PCL's default VMI (vertical motion index).	
Variable	#	
	Purpose	Specifies the default number of lines per inch.
	Range	100-4800 (1-48 lines per inch x 100)
	Default	600 (6 lines per inch x 100)
	Format	Integer

Set Point Size Command

Syntax	%%IncludeFeature:pointsize*(default font size)*	
Purpose	Specifies the point size for scalable default font.	
Notes	If the selected font is not scalable or if a bitmap font size is specified, this setting is ignored.	
Variable	default font size	
	Purpose	Specifies the floating point number for point size.
	Range	0.25 to 999.75 in 0.25 increments
	Default	Printer configuration dependent
	Format	Floating point number

CCITT Commands

The CCITT command language consists of ASCII text strings that set options for the CCITT emulation. The options must be set on a per-image basis because they are returned to their default values after each image is decompressed. If the correct options are not set for decompression before the decompression begins, the emulation absorbs the data until it finds a valid end-of-job marker.

The remainder of this chapter provides the function, syntax, and default settings of all available CCITT commands.

Accessing CCITT Emulation

To access CCITT emulation, include the following QMS Document Option Commands (DOC) to the beginning of each data stream:

```
%%IncludeFeature: emulation (ccitt)
```

Command Syntax

The following conventions are used in the discussion of all CCITT commands that follow.

mixed-case bold	CCITT command
mixed-case italic	Command variable; replace thes variable with information specific to your document
%%	Introduce the command; you must type these characters
( )	Enclose command variables; you must type the parentheses

ImageSize

Function	Sets the image size to be used for decompression of the image data that follows the **%%ImageData** command.	
Syntax	%%ImageSize *(width height)*	
	width	The width of the image in pixels.
	height	The height of the image in pixels.
Default	None.	
Notes	This command must be used in order to decompress an image. This command must be sent before the **%%ImageData** command. If it is not, the image is ignored.	

ImagePosition

Function	Sets the image position (in 0.001" increments) from the upper-left corner of the page.	
Syntax	%%ImagePosition *(x y)*	
	x	The horizontal location of the image's upper-left corner.
	y	The vertical location of the image's upper-left corner.
Default	0 0—Places the image in the upper-left corner of the page.	

Rotation

Function	Sets the rotation to be used when the image is decompressed.	
Syntax	%%Rotation *(degree)*	
	degree	00° rotation 9090° rotation 180180° rotation 270270° rotation
Default	0–The image is not rotated	
Notes	Rotation occurs about the current image position origin set by the **%%ImagePosition** command. If no **%%ImagePosition** command has been used, rotation occurs about the origin (0,0). Any rotation (except 0) about the default image position (0,0) causes the image to be rotated off the page. Therefore, any rotation other than 0° must coincide with a **%%ImagePosition** command.	

LineEnd

Function	Sets line-end flags, which indicate whether CCITT end-of-lines are included in the image data.	
Syntax	%%LineEnd *(true/false)*	
	true	Indicates that end-of-lines are required in the image data. Otherwise, an error results.
	false	Indicates that end-of-lines are not required in the image data but, if present, are accepted with no error.
Default	false	

BlockEnd

Function	Indicates whether a CCITT End of Block is included in the image data.	
Syntax	%%BlockEnd *(true/false)*	
	true	Indicates that a BlockEnd is required in the image data. Otherwise, an error results
	false	Indicates that a BlockEnd is not required in the image data but, if present, it is accepted with no error.
Default	false	

EBAMode

Function	Sets the Encoded Byte Align flag, which indicates that the image data is broken into individual lines that are each aligned on a byte boundary.	
Syntax	%%EBAMode *(true/false)*	
	true	Indicates that the data is encoded byte aligned.
	false	Indicates that the data is not encoded byte aligned.
Default	false	

BitReverse

Function	Causes the CCITT emulation to reverse the bits within each byte of the image data automatically.	
Syntax	%%BitReverse *(true/false)*	
	true	Indicates that the bits are to be reversed.
	false	Indicates that the bits are not to be reversed.
Default	false	

InvertImage

Function	Indicates whether the data in the image is inverted.	
Syntax	%%InvertImage *(true/false)*	
	true	Indicates that the data in the image is inverted.
	false	Indicates yhat the date in the image is not inverted.
Default	false	

Compression

Function	Sets the data compression type of the data following the **%%ImageData** command.	
Syntax	%%Compression (type)	
	type	0Group 4 1Group 3, 1-dimensional 2Group 3, 2-dimensional
Default	0 (Group 4)	

DPI

Function	Sets the print resolution to match the scanned resolution of the original image. This command can also be used to scale the image. DPI resolutions above the original scanned resolution will reduce the image while DPI resolutions below the original scanned resolution will enlarge the image.	
Syntax	%%DPI *(horizontal vertical)*	
	horizontal	
	vertical	
Default	Currently selected engine resolution.	

ImageData

Function	Instructs the emulation to begin decompression of the image data using the currently set image options. This command begins reading the image data after the end of the current line. After the image, the input stream is flushed until the next set of **%%** characters is encountered.
Syntax	%%ImageData
Default	None—no options.
Notes	You must specify **%%ImageSize** before **%%ImageData**. If you do not, the data following **%%ImageData** is absorbed with no effect on the file.

PageEnd

Function	Instructs the emulation to eject the current page (whether or not any data has been printed to it) and clear the page memory. If an image has not been decompressed since the beginning of the job or since the last **%%PageEnd**, a blank page is ejected. You must include this command for a page to be printed.
Syntax	%%PageEnd
Default	None—no options.
Notes	You must include this command for a page to be printed. Image data must be included after this command.

JobEnd

Function	Signals the end of a CCITT print job and resets the printer to the default mode. Ends the job and returns the printer to ESP mode.
Syntax	%%JobEnd
Default	None—no options.
Notes	If this command is omitted, the printer remains in CCITT emulation mode until the emulation wait timeout expires (Administration/x/Emul Timeout menu).

❖

D

Notices

In This Chapter . . .

- Manual notices
- Laser safety
- FCC compliance
- International notices
- Colophon

Manual Notice

QMS, Inc. reserves the right to make changes to this manual and to the equipment described herein without notice. Considerable effort has been made to ensure that this manual is free of inaccuracies and omissions. **However, QMS, Inc. makes no warranty of any kind including, but not limited to, any implied warranties of merchantability and fitness for a particular purpose with regard to this manual**. QMS, Inc. assumes no responsibility for, or liability for, errors contained in this manual or for incidental, special, or consequential damages arising out of the furnishing of this manual, or the use of this manual in operating the equipment, or in connection with the performance of the equipment when so operated.

Laser Safety

This printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the user documentation, may

cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1 Reorient or relocate the receiving antenna.

2 Increase the separation between the equipment and the receiver.

3 Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

4 Consult the dealer or an experienced radio/TV technician for help.

» Note: A shielded cable is required to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules.

Caution: Any modifications or changes to this product not expressly approved in writing by the manufacturer responsible for compliance to Federal Regulations could void the user's authority to operate this product within the Laws and Regulations of the Federal Communications Commission.

WARNING! To prevent electrical shock, do not remove any covers from your printer unless you are experienced in working with circuit boards and are following instructions for procedures described in QMS documentation.

ACHTUNG! Um elektrische Kurtzschlüsse zu vermeiden, entfernen Sie keine Gehaüseteile von Ihrem Drucker, wenn Sie keine Erfahrungen im Umgang mit elektrischen Bauteilen haben. Befolgen Sie die in der QMS Dokumentation beschriebenen Hinweise.

International Notices

Canadian Users

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques (de la classe B) prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Vfg 1046/1984 Conformity Statement

Hierdurch bescheinigen wir, daß dieses Produkt in Übereinstimmung mit Postordnung 1046/1984 ist und RFI unterdrückt ist. Die Geschäftslage und der Verkauf diese Geräte auszuprobieren, mit der Übereinstimmung und der Regierung zu bestätigen, wurde der Deutschen Bundespost gegeben.

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß QMS 1725E Print System in Übereinstimmung mit den Bestimmungen der Vfg 1046/1984 funkentstört ist. Der Deutschen Bundespost wurde das Inverkehrbri ngen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

QMS Inc., Mobile, AL, USA

Declaration of Manufacturer/Importer

We hereby certify that the QMS 1725E Print System is in compliance with Vfg 1046/1984 and is RFI suppressed.

The marketing and sale of this equipment was reported to the German Postal Service.

The right to retest this equipment to verify compliance with the regulation was given to the German Postal Service.

QMS Inc., Mobile, AL, USA

Electronics Emissions

Your printer complies with the Electronics Emissions Requirements of the German Federal Minister for Postal and Telecommunication Technology regulation:

Vfg 1046/1984

Your printer complies with the Electronics Emissions Requirements of the European Economic Council directive:

82/499/EEC

Colophon

This manual was written and formatted in FrameMaker. Some illustrations were created in Adobe Illustrator and translated to WMF format in Transverter Pro; other illustrations were created directly in FrameMaker. The menu configuration tree was produced using Banner Blue Software Inc. ORG PLUS for Windows. Typefaces chosen are Benguiat, Courier, Helvetica, MarkerFelt, and Tekton. The manual was printed in camera-ready form on a QMS printer.

❖

E

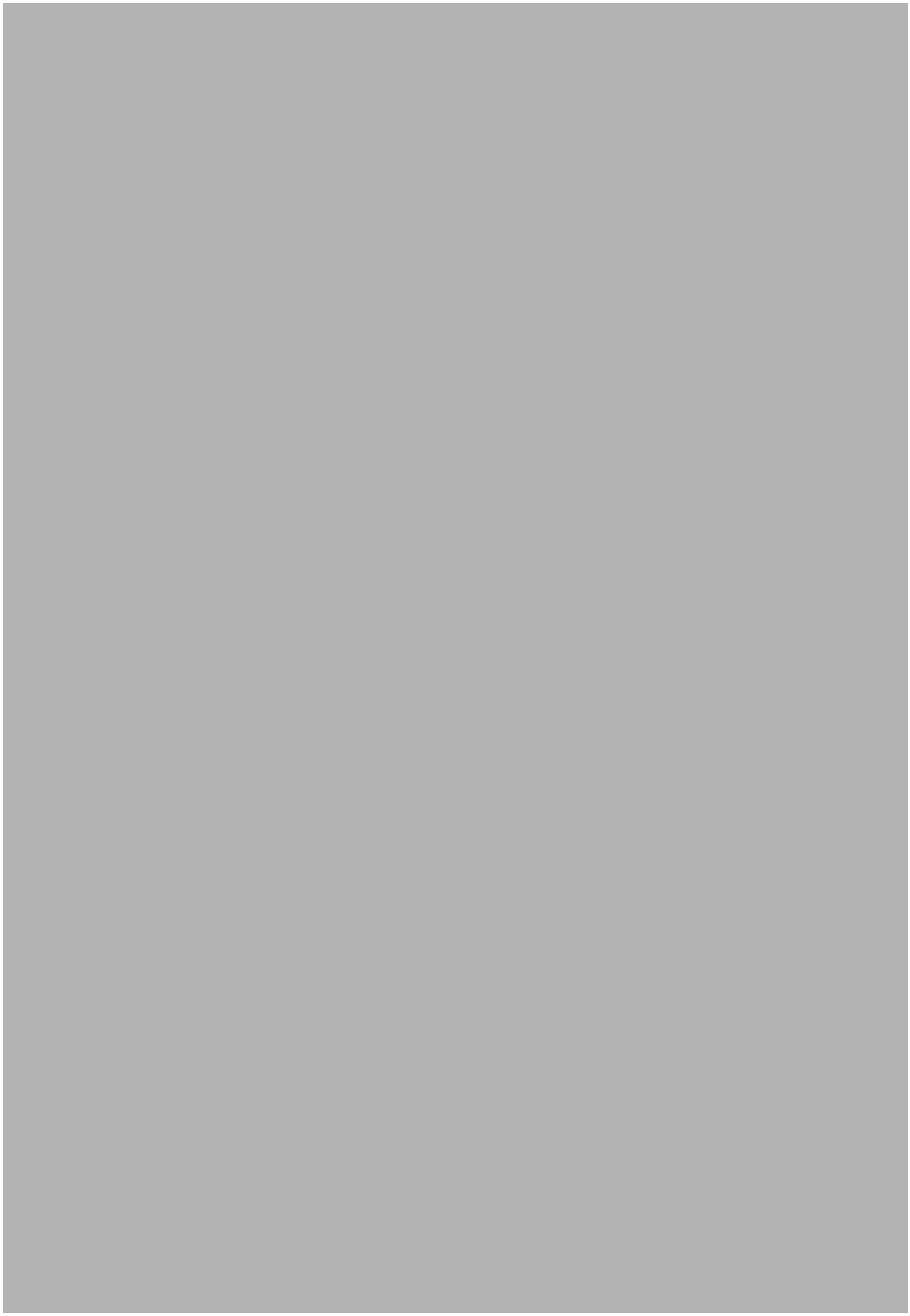
Configuration Menu

In This Chapter . . .

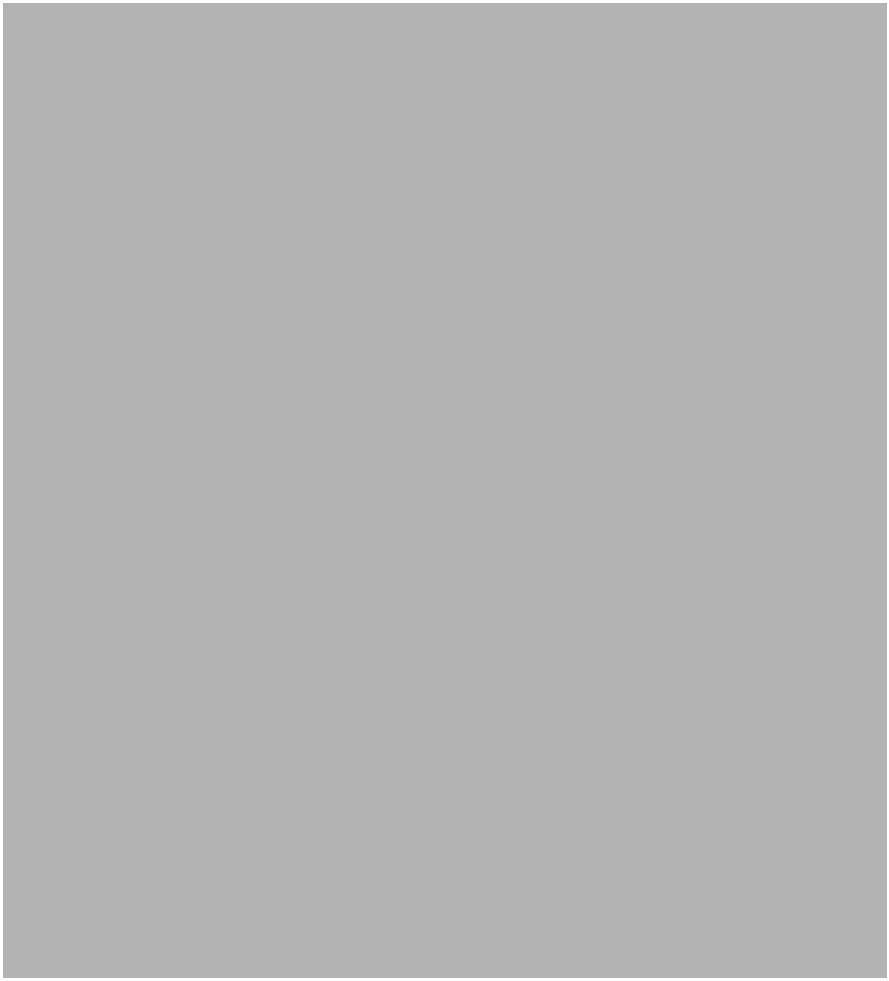
- Configuration Menu Diagrams

Configuration Menu

» Note: The Installation menu appears only when an optional security card is installed.



Press
Online/Offline
Menu



❖

Glossary

AppleTalk

A local area network communication protocol developed by Apple Computer. AppleTalk operates on LocalTalk, Ethernet, or Token-Ring cabling and can be used by Macintosh systems, PCs, and printers. See also *LocalTalk*.

Application

Any computer program designed to help people perform a certain type of work (for example, word processing, page layout, programming, graphics, and spreadsheets). Adobe Illustrator, Excel, and Word are applications.

ASCII

An acronym for American Standard Code for Information Interchange. This coding scheme, developed by the American National Standards Institute (ANSI), specifies a digital code for each of the 96 displayable characters on a standard computer keyboard as well as for control characters. The full ASCII character set is 250+.

Baud Rate or Baud

The data transfer rate between two devices, such as your computer and your printer. Both devices must be configured for the same baud rate. Your printer's baud rate ranges from 300 to 38,400 bits per second.

Bit

An acronym for binary digit. The bit is the most fundamental unit of information that a computer can accept. It has two states called 1 (one) and 0 (zero), or on and off, and can be used to represent a yes/no statement. Groups of bits are used to represent more complex statements, such as characters. The most common grouping of bits is called a byte, which consists of 8 bits. See also *ASCII*, *byte*.

Bitmap

A grid composed of small dots used to define an image, line drawing, or character. See also *raster graphics.*

Bitmapped Font

A bitmapped font is a one in which each character is represented by a set of dot patterns. Each font size requires a different set of dot patterns.

Buffer

Storage space used to compensate for a difference in rate or sequence of data flow when transmitting data from one device to another.

Byte

A unit of information consisting of 8 bits, the equivalent of one character. See also *bit*.

Cancel Key

The control panel key that cancels a print job or sends an end-of-job indicator to a print job waiting for incoming data. It is not necessary to take the printer off line before using the Cancel key.

Card

See *font card*, and *security card*.

Connector

A coupler used to join a cable to a device or to another cable. Connectors are identified as male or female. A male connector has one or more exposed pins or prongs. A female connector has one or more receptacles designed to accept the pins on the male connector.

Connector Box

A piece of equipment consisting of a small box with a built-in cable that links the printer to the LocalTalk cable system.

Consumables

Supplies, such as paper, transparencies, and toner.

Control Panel

The area on the front of the printer consisting of eight keys that allow you to configure the printer and perform frequently used operations, four LEDs (light-emitting diodes) that identify various printer status information, and an LCD (liquid crystal display) message window that provides status information ad configuration menus.

Controller

The software that controls the engine of a printer. The controller is the intelligence of the printer.

Crown

A multitasking operating system architecture developed by QMS and used in the QMS 1725E Print System.

Default

A printer control panel setting used in the absence of a application selection. See also *factory default.*

Download

Transfer information from one device to another. Downloaded fonts and emulations are not built into the printer. They are transferred from the computer and temporarily stored in the printer's memory (until the printer is turned off) or on a hard disk.

dpi

An acronym for dots per inch, a measurement unit used to indicate printer resolution. Your QMS 1725E Print System has 300x300 and 600x600 dpi resolution.

Driver

See *printer driver*.

DTR/DSR

An acronym for Data Terminal Ready and Data Signal Received, a hardware-controlled protocol. It controls the flow of data via signals on the DTR/DSR line, as opposed to XON/XOFF protocol, which is software controlled.

Electrophotographic Drum

A drum in the toner cartridge that is sensitive to both light and electricity. It is used in the creation and transfer of images to the printed page. See also *toner*, *toner cartridge.*

Emulation

Software that allows the printer to respond to commands intended for a different type of printer. For example, when the printer is set for HP PCL emulation, it responds to the same commands (HP PCL) that a Hewlett-Packard LaserJet printer does.

Emulation Card

See *font card*, and *security card*.

Emulation Sensing Processor (ESP) Technology

Emulation Sensing Processor technology. Using a form of artificial intelligence, ESP technology analyzes incoming file data from any of your printer's interfaces, selects the appropriate printer language from those installed on the printer, and processes the print job. ESP technology works with most popular commercially available applications.

Energy Star

The US Environmental Protection Agency (EPA) Energy Star Computers program promotes the use of energy-efficient personal computers, monitors, and printers and the reduction of air pollution caused by power generation. Equipment designated as being Energy Star compliant have qualified under the Energy Star regulations.

Ethernet Network

Developed by Xerox, Ethernet is a local area network that uses coaxial cable (thick or thin), or twisted pair wire to connect nodes transmitting variable-length frames of data at 10 Mbps (10-million bits per second).

EtherTalk

Refers to the communication protocol used by Macintosh computers when transmitting and receiving data through an Ethernet interface.

Excess Memory Client

The memory remaining after providing all the other memory clients with their specified amounts of memory is automatically added to the excess memory client. All excess memory in your QMS 1725E Print System goes into a pool shared by the frame buffer and the display list clients.

Expansion, RAM

See *memory upgrade*.

Factory Default

The printer settings that are programmed into the printer at the factory. These settings are used unless they are changed at the printer control panel or overridden by settings in an application. See also *default*.

Flash ROM

Quick loading, reprogrammable memory that holds information (such as system code and downloadable emulations) even when the printer is turned off. The chief advantage of flash ROM is that system upgrades can be loaded from a floppy disk without the necessity of swapping out expensive EPROMS or having to place a service call.

Font

A complete character set in one typeface or style. Two types of fonts are available for your printer—downloaded and resident. See also *download*, *resident fonts*, *typeface*, and *typeface family*.

Font Card

A module the size of a credit card that contains fonts that can supplement the printer's internal, resident fonts to increase the variety of available typefaces.

Fuser Assembly

An assembly that contains two heated rollers between which the paper passes after toner has been applied; the heated rollers bond the toner to the paper.

Gamma Correction

Gamma corrections allow you to sharpen the midrange contrast when scanning black and white images.

Gray Scale

Progressive shades from black to white which provide detail and contrast to printed images.

Handshake, Handshaking

A procedure, usually part of a communications protocol, to establish a data communications path. Devices must be able to communicate with each other. Your printer uses either XON/XOFF or DTR/DSR protocol to communicate with a computer.

Hard Disk

A secondary storage place for such items as downloaded fonts and emulations and for spooled data, thus providing virtual memory capabilities. You can add an internal hard disk and up to three external hard disks to your QMS 1725E Print System.

Header Page

A separator page, printed before a print job, that identifies the print job and helps users sort out the print jobs in the printer's output tray. See the *QMS Crown Document Option Commands* manual information on customizing the header page information.

Heap

A portion of memory reserved for a program to use for temporary storage.

Host

The computer or network to which a printer is connected.

HP PCL

An acronym for Hewlett-Packard Printer Control Language, the printer control language native to the HP Laser Jet Series II and III printers. Your QMS 1725E Print System has a resident HP PCL 5 emulation.

HP-GL

An acronym for Hewlett-Packard Graphics Language, the programming language on which HP plotters are based. Your QMS 1725E Print System has a resident HP-GL emulation.

IDE

An acronym for Integrated Drive Electronics. “Integrated” refers to the fact that all of the controller electronics are on the drive itself, so no separate adapter card or expansion slot is required. See also *SCSI*.

Imageable Area

The maximum area of a sheet of media capable of being printed on. It is subject to both hardware limits (the physical page size and the margins required by the print engine) and software constraints (the amount of memory available for the full-page frame buffer).

Intellifont

An optional font SIMM containing 17 HP PCL 5 fonts that can be installed inside of the *QMS 1725E Print System*. Adding this option increases the number of available PCL 5 fonts for your printer from the 20 standard fonts to 37 (equivalent to the number of fonts available on a Hewlett-Packard LaserJet 4Si).

Interface

The place where two devices are physically connected, allowing them to communicate.

Interface Cable

A special cable used to connect the printer to the computer so they can communicate.

Interface Port

Your printer comes with three standard interface ports—serial, parallel, and Ethernet—located on the back panel. An optional interface port is available through the installation of an optional network interface card. See also *network interface card*.

Jam Recovery

The printer's ability to reprint the jammed page and then continue with the print job once you remove the jammed media. With most printers, if a jam occurs, you must reprint the job after removing the jammed media.

Kanji

A Japanese character set. The *QMS Kanji Option Kit* contains Kanji fonts licensed to QMS by Morisawa and Company, Ltd., and TypeBank. The Kanji Option Kit enables your printer to print Kanji fonts in a variety of point sizes and in different styles and resolutions.

LAN Manager

A technology that allows DOS, UNIX, and OS/2 operating systems to share network resources and files. (Developed by Microsoft)

LAN Server

A version of LAN Manager distributed by IBM. See *LAN Manager*.

Landscape Orientation

See *orientation*.

LCD

An acronym for Liquid Crystal Display. The printer's LCD message window on the control panel provides status information and configuration menus.

LED

An acronym for Light-Emitting Diode. Four LEDs on the printer's control panel indicate printer status.

LocalTalk

One type of cable system used to link computers and peripheral devices in an AppleTalk network. See also *AppleTalk*.

Manual Feed

The process by which media is fed into the printer by hand (as opposed to letter the printer automatically pull media from a cassette or tray).

Media

Any material (such as paper, labels, and transparencies) used in the printer for printed output.

Memory

The space within your printer where information is stored while being actively worked on. The term applies to internal storage space as opposed to external storage, such as disks or tapes. See also *RAM* and *ROM.*

Memory Client

A user of a block of memory. Each memory client controls certain features. When insufficient memory is allocated to a specific client, the features it controls may not be accessible.

Memory Upgrade

An available option that is easily attached to the printer's controller board to expand its standard 8 MB of RAM to a maximum of 64 MB in increments of 1, 2, 4, 8, 16, or 32 MB. See also *SIMM (Single In-Line Memory Module*).

Menu Key

The control panel key that accesses the printer configuration menu when the printer is off line. Use this key to advance through the menus or to return to a previous position in the menu. When changing printer setup, press this key to cancel a change (before pressing the Select key) or to return to previous menus one level at a time.

Motherboard

The main circuit board containing the primary components of a computer system.

NetWare

Distributed by Novell, *Netware* is an operating system that allows Ethernet and Token-Ring network users to share system resources (such as hard disks and printers) and files.

Network Interface Card (NIC)

A printed circuit board, in the shape of a card, used to connect a printer physically to a network cable. See your QMS vendor for a complete list of available network interface cards.

Next Key

The control panel key that advances through a list of selections or options for a menu. When changing character information, use this key to advance to the next choice for the current input (underlined) character.

Non-volatile Memory

This type of memory is not lost when the printer loses power.

Null Modem

A cable configuration used for serial communication. This cable arranges the communication between two devices.

NV RAM

This protected form of RAM is used to store information such as your printer's configuration menu. Configuration options you have chosen, such as emulations, memory settings, and input bins, are saved to this non-volatile RAM. This information is not lost when you turn off your printer.

Off Line

Not accepting data from the computer. The printer is taken off line by pressing the Online/Offline key. When the Online indicator is off, the printer is off line. The printer must be off line to enter the Configuration menu.

On Line

Accepting data from the computer. The printer is on line when the Online/Offline key is pressed and the Online indicator is on.

Online/Offline Key

The control panel key used to take the printer off line and put it back on line.

Orientation

The direction of print on the page. Printing across the narrow width of a page is called portrait orientation printing. The word "portrait" comes from portraits of people, which are usually vertical in format. Printing across the length of a page is called landscape orientation printing. The term "landscape" is derived from pictures of the landscape, which are usually horizontal in format.

Page Description Language (PDL)

A programming language, such as PostScript, that is used to describe output to a printer or a computer monitor.

Page Memory

A special buffer large enough to hold an entire page of data.

Paper Path

The path the paper follows in its journey through the printer; it begins at the paper cassette or tray pickup point and ends at the output tray.

Parallel Interface

A data transmission technique that sends each bit simultaneously over separate lines. (For this reason it is generally faster than a serial interface.) It is normally used to send 1 byte (8 bits) at a time between computers and printers. You printer has a Centronics IEEE 488/1284 parallel interface port. See also *serial interface*.

Parity, Parity Check

The addition of overhead bits to ensure that the total number of 1s in a grouping of bits is either always even (for even parity) or always odd (for odd parity). This permits detection of single errors. It may be applied to characters, transmission blocks, or any convenient bit grouping.

PCL

See *HP PCL.*

PCMCIA

An acronym for Personal Computer Memory Card International Association, which sets industry guidelines for a standard 16-bit expansion socket that accepts credit-card size memory cards (such as fonts). Type I card slots accept 3.3 mm (.13") thick cards while Type II card slots accept 5 mm (.20") cards.

Peripheral Device

A hardware device connected to a computer (such as a printer) or to a printer (such as an external hard disk).

Permanent Soft Fonts

Permanent soft fonts are soft fonts downloaded into the printer's memory that remain resident there, even if the printer is reset, until the printer is turned off or the fonts are deleted by an application. See also *download*.

Physical Memory

The amount of RAM installed in the printer.

Point Size

The height of a character or symbol in a font. There are 72 points per inch. This text is printed using a 10 point font.

Portrait Orientation

See *orientation.*

PostScript

A page description language trademarked by Adobe Systems Incorporated. PostScript Level 2 capabilities, among others, are implemented in your printer through a QMS-developed PostScript emulation. PostScript Level 2 emulation is the native language of your printer's controller. It describes text, graphics, and page images to the printer.

Previous Key

The control panel key that returns through the list of previous selections or options for the current menu. When changing the character information, use this key to return to the previous choice for the current input (underlined) character.

Print Density

Print density refers to the relative darkness of print on the page. Very dense print appears totally black. Less dense print looks lighter, with solid-filled areas not totally covered. Print density can be adjusted by a lever inside the printer.

Print Engine

The non-intelligent portion of the printer, including the laser, print drum, and paper-feeding mechanism.

Print Quality

A general measure of the appearance and readability of a printed page. Criteria of print quality include the darkness, clarity, and sharpness of the printed page.

Printed Circuit Board

A flat board made of plastic, fiberglass, or another nonconducting material on which chips and other electronic components are mounted.

Printer Driver

A printer driver is a program that translates the file you are printing into a language that the printer understands. Usually, the printer driver is installed within an application.

Protocol

A set of rules or standards designed to enable computers and other devices to connect to one another and to exchange information.

Queue

A list of documents waiting to be printed.

RAM

An acronym for Random Access Memory, the memory your printer uses to perform tasks. It can be written to and read from. Once a task is complete, the memory is free again to be used for another file. This memory is volatile, so if your printer loses power while a file is being sent, you must resend the file. The number and type of features you can run simultaneously on your printer depend on the amount of RAM available and how that RAM is distributed. RAM can be increased by adding SIMMs. See also *SIMM*.

RAM Disk

Also called a virtual disk. The RAM disk is an area of RAM that is used to simulate an additional hard disk. Data can be written to and read from a RAM disk more quickly than a hard disk, but a RAM disk loses any information stored on it when the printer's power is turned off. The frame buffer and spooling buffer are RAM disk clients. See also *RAM*.

Raster Graphics

The system of forming graphics using a bitmap, or grid of small dots, is called raster graphics. The term "raster" denotes the Cartesian grid system

in which the dots are arranged. Bitmaps can define images, shapes, or characters created with a specific number of dots per inch. See also *bitmap*.

Rasterization

The conversion of vector graphics (images described mathematically as points connected by straight lines) to equivalent images composed of pixel patterns that can be stored and manipulated as sets of bits.

Remote Console

A feature in QMS Crown printers allowing users to configure the printer and monitor printer conditions over the Ethernet network interface.

Resident

Permanently stored in the printer's memory.

Resident Fonts

Fonts permanently stored in the printer's memory; also called internal fonts.

Resolution

A measurement of the dots per inch (dpi) in output material, either printed or visual, as in a high-resolution monitor. Your printer features a 300x300 and 600x600 dpi resolution.

RISC

An acronym for Reduced Instruction Set Computing, a microprocessor design that focuses on rapid and efficient processing of a relatively small set of instructions.

ROM

An acronym for Read Only Memory. This type of memory contains data and/or printer-executable instructions that can be read but not modified. On QMS Crown printers, the operating system code, resident fonts, and resident emulations are all stored in ROM. This information is not lost when the printer's power is turned off.

RTS

An acronym for Request To Send. RTS is a signal sent from the host to the printer indicating it is ready to send data.

Scalable Font

A scalable font is one in which each character's dot pattern (bitmap) is generated from a mathematical representation (or outline) of the character. Scalable fonts eliminate the need to store many different font sizes.

Screen

The pattern in which dots or lines are placed on a page to create colors or levels of gray. See also *screen angle*.

Screen Angle

The angle at which a screen is printed. See also *screen*.

Screen Font

A font designed for display on a computer monitor. Screen fonts usually have corresponding printer fonts.

SCSI

An acronym for Small Computer System Interface, which allows up to three external hard disks to be connected to your printer. See also *IDE*.

Security Card

A module the size of a credit card that allows you to set passwords for the Operator Control and Administration menus. When a security card is inserted into the printer card slot, the Installation menu appears in the configuration menu.

Select Key

The control panel key used to access a menu or to choose a displayed selection or option.

Serial Interface

A data transmission technique that sends each bit sequentially over a single line. It is normally used to send one bit at a time for data communications. See also *parallel interface*.

SIMM (Single In-line Memory Module)

A small circuit board designed to accommodate surface-mount memory chips. SIMMs use less board space and are more compact than more conventional memory-mounting hardware. See also *memory upgrade*.

SIO (Simultaneous Interface Operation)

The capability of printing to all three of the printer's concurrently active ports rather than being restricted to one.

Soft Fonts

Fonts created or stored on disks. They can be transferred to the printer's memory and remain available to be used until the printer is turned off. See also *download*.

Spool

An acronym for simultaneous print operations on line. Spooling is temporary storage to hold print jobs until the printer is available to process them.

Start-up Page

A page generated when you turn on the printer (unless you have disabled it). It gives limited information on the printer, including name, pages printed, current interface settings, and amount of RAM available.

Storage

A device in or on which information can be kept. There are three main types of storage, ROM, RAM, and hard disks. ROM stores read-only data, RAM represents temporary storage, and hard disks hold information on a more permanent basis. See also *hard disk*, *RAM*, *ROM*, *spool*.

System Administrator

The person in charge of managing a network; also called a network administrator.

Timeout

The expiration of a predefined interval, that triggers some action such as a disconnection that occurs following 30 seconds without any data activity (in a 30-second, no-activity timeout). Timeout also refers to the length or existence of such an interval.

Toner

A dry, powdered substance capable of being attracted to electrically charged areas on a photosensitive revolving drum. The printer's EP (electrophotographic) toner cartridge holds the toner. The toner is first attracted to this charged area, then attracted to the negatively charged paper. The toner is melted (or fused) in place by the fuser assembly.

Toner Cartridge

A disposable cartridge containing dry toner and a print drum. The QMS 1725E Print System uses an EP-BII toner cartridge.

Trailer Page

A separator page, printed after a print job, that identifies the print job and helps users sort out the print jobs in the printer's output tray. See the *QMS Crown Document Option Commands* manual information on customizing the trailer page.

Transformer Box

Also known as a connector box. This piece of equipment consists of a small box with a built-in cable that links the printer to a LocalTalk cable.

Transparency

A type of media, also known as OHP (overhead projection) film, commonly used for presentations.

Typeface

The basic printed design of characters in a font. For instance, Courier, and Times typefaces each print characters of different designs.

Typeface Family

A group of related typefaces. For example, the Times typeface family consists of four typefaces: Times Roman, **Times Bold**, *Times Italic*, and ***Times Bold Italic***. See also *font* and *typeface*.

Utility

A program that performs a specific function of computer system management, such as maintaining disks and files or controlling a peripheral device.

Virtual Memory

An extension to the effective size of the printer's memory by using a disk file or swap file to simulate additional memory space. It enables the hard disk to accept data swapped from RAM to free temporarily the RAM for other tasks.

Volatile Memory

Memory that is cleared when the printer is turned off. Most RAM is volatile.

XON/XOFF

Control characters used for flow control in data transmission.

❖

Index

A

Administration /Memory 5-12
Administration menu 4-5, 4-15
  Special Pages menu 4-43
  Startup Options menu 4-46
Administration password 4-62
Adobe
  Illustrator 6-39
  Separator 6-39
Advanced status page 4-43
Albertus 6-27
Aldus
  Freehand 6-39
  PageMaker 6-39
  PrePrint 6-39
Aligning image 2-3, 4-54
ANSI ASCII symbol set (HP-GL) 3-10
Antique Olive 6-27
AppleTalk G-1
  See also *LocalTalk*
  Testing communication 6-40
Applications G-1
  Configuration, printer 4-2
  Macintosh 6-39
ASCII G-1
Autowrap menu (Lineprinter) 4-42
Avant Garde Gothic
  ITC Avant Garde Gothic 3-6

B

Baud rate G-2
  Menu (Serial) 4-20
BCP
  See *PS Protocol*
Binary Communications Protocol
  See *PS Protocol*

Bins
Output 4-14
Selection 4-13
Bit G-2
Bitmap G-2
Bitmapped font 3-3, G-2
Bookman
ITC Bookman 3-6
Buffer G-2
Buffer, frame
Memory, allocating 4-51
Buffers
Spooling 5-16
Bulletin board, QMS A-3
Buzzer
Menu 4-57
Warning 4-57
Byte G-2
Mode, parallel 5-25

C

Cable pinouts
Ethernet
10BaseT B-11
10Base2 BNC B-11
IBM PC/AT or Compatible B-10
IBM PC/XT or Compatible B-10
LocalTalk B-12
Macintosh to Serial B-12
Cabling
LocalTalk 6-35
Macintosh 6-35
Canadian users
Statement D-4
Cancel key G-2
Card
Emulations 6-11
Installing 6-11, 6-13
Font 6-12
Security 6-13
Cassettes 6-3
Chaining 4-14
See also *Bins*
CCITT
Accessing C-20
Commands C-21
Change printer name
Error message 6-37
Character Map menu (Lineprinter) 4-40
Character set 3-2
Clarendon Condensed 6-27
Client, memory 5-8, 5-12
Collation 4-13
Colophon D-5
Color encoding
HP-GL 5-29
Communication
Modes 5-3
Submenu 4-16
Testing, Macintosh 6-40
Compatibility mode, parallel 5-26
CompuServe A-3
Configuration
Application, via 4-2
Changes, canceling 4-10
Changes, saving 4-10
Character information, changing 4-7
Commands, via 4-3
Control panel, via 4-3
Defaults, restoring 4-12, 4-59
Menu options, selecting 4-6
Menu diagrams E-2,3,4
Methods 4-2
PostScript operators, via 4-3
PS Executive Series Utilities, via 4-3
Quick (see *Frame Buffer*)
Remote Console, via 4-4

Configuration menu 4-4
Accessing 4-5
Administration menu 4-5
Changes, canceling 4-10
Changes, saving 4-10
Character information, changing 4-7
Installation menu 4-5
Operator Control menu 4-4
Options, selecting 4-6
Connection menu (LocalTalk) 6-41
Connector G-2
Connector box G-3
Conservation
Energy 4-57
Consumable supplies B-7, G-3
Warranty B-13
Context switching 5-16
Control panel G-3
Configuration, printer 4-3
Language, message window 4-11, 4-60
Message window language 4-11, 4-60
Controller G-3
Specifications B-3
Conventions, typographic 1-4
Copies 4-12
Menu 4-12
Coronet 6-28
Correction, gamma 4-56
Courier 3-7, 3-11, 6-27
cpi
Pitch 3-4
CR is CRLF menu (Lineprinter) 4-41
Crown G-3
Customer support, QMS A-2

D

Data Bits menu (parallel) 4-25
Data Bits menu (Serial) 4-21
Def Job Prio menu
LocalTalk 6-43
Def Resolution menu 4-56
Default G-3
Default Font Index menu (PCL5) 4-34
Default Font menu (PCL5) 4-30
Defaults, configuration
Restoring 4-12, 4-59
Design
Page 3-13
Desktop publishing
Bibliography 3-13
Device numbers, hard disks 6-47
Dingbats
ITC Zapf Dingbats 3-6
Disk
See *Hard Disk*
Disk cache 4-50, 5-16
Disk Operations
Collation 4-61
Spool Overflow 4-61
Disk Operations menu 6-48
Disk swap 4-53
Display 4-50
Display list 5-13
Do Error Handler menu 4-47
Do Start Page menu 4-46
Do Sys Start menu 4-46
DOC C-4
CCITT commands C-20
Header page commands C-2
PCL 5 emulation commands C-3, C-4, C-7
HP-GL emulation commands C-2
Lineprinter emulation commands C-3
PCL 4 emulation commands C-4
PostScript emulation commands C-4
Printer commands C-4
Trailer page commands C-2
Updated commands C-4
Document Option Commands
See *DOC*
Dots per inch
See *dpi*
Downld Location menu (PCL5) 4-35

Download G-3
Downloadable fonts 3-10
Downloading optional emulation 6-52
dpi G-3
Drivers, print
Macintosh 6-36
PDF 6-39
PDX 6-39
PPD 6-39
Duplexer assembly 6-7
Installing 6-7
Duplexing 4-15
Tumble duplex 4-15

E

ECP mode, parallel 5-26
Electronics emissions D-5
Emul Timeout menu 4-17
Emulation 4-16, 5-15
Card 6-12
Downloading optional 6-52
HP-GL parameters, setting 4-36
Lineprinter parameters, setting 4-39
Memory, allocating 4-49
Optional, downloading 6-52
PCL5 parameters, setting 4-29
PostScript parameters, setting 4-29
Selecting 5-2
Setting parameters 4-28
Temporary, allocating memory 4-49
Timeout 4-17
Emulation cards
Installing 6-11
Emulation Level menu (PostScript) 4-29
Emulation menu
Menu 4-28
Parallel 4-24
Serial 4-18
Emulation temporary 5-16
Enable Disk Swap menu 4-53
Encoding, color
HP-GL 5-29
End Job Mode 5-19
%%EndOfDocument 4-19
%12345X 4-19
Menu
Parallel 4-25
Serial 4-19
QMS EOD 4-19
Setting 5-21, 5-22
End-of-document command 5-19
See also *EOD command*
Energy Conservation 4-57
Energy Saver menu 4-57
Engine
Default Paper 4-55
Features, configuring 4-54
Input bin name 4-55
Letterhead 4-58
Manual Feed Timeout 4-58
Output bin name 4-56
Engine menu
Buzzer menu 4-57
Energy Saver menu 4-57
Gamma Correction 4-56
Image Alignment menu 4-54
Offset stacking 4-58
Page Recovery menu 4-57
Resolution menu 4-56
Toner Out Action menu 4-57
Vertical Offset menu 4-55
Enhanced Compatibility Port mode, parallel 5-26
Enhanced Mode menu (HP-GL) 4-37
Enhanced Parallel Port mode, parallel 5-26
Envelope feeder 6-3
Installing 6-3
Envelopes
See also *Media*
Selection 6-3
Environmental requirements B-4

EOD command 5-20
Network job separator 5-24
Other print queuing systems 5-21
PC print server 5-21
Stand-alone PC 5-21
EPP mode, parallel 5-26
Equation
Bytes to kilobytes 5-12
Error Handler, PostScript 4-47
Error messages
Change printer name 6-37
Hard disks 6-48
ESP
Defined 5-2
Timeout 4-17
ESP Timeout menu 4-17
Expand Mode menu (HP-GL) 4-37
External hard disk 6-46, B-6

F

Factory defaults, restoring 4-12, 4-59
FCC compliance D-2
Caution D-3
FF is CRFF menu (Lineprinter) 4-41
File
Swap 4-53
Flash ROM 5-10
System software, updating 6-62
Flow control
Hardware 4-22
Software, receive 4-21
Software, transmit 4-21
Font
Bitmapped 3-3, G-2
Defined 3-2
Installing optional 6-50
Installing, hard disk 4-61
PCL 5 C-4
PostScript emulation B-3
Removing optional 6-51
Removing, hard disk 4-61
Resident, PostScript 3-7
Samples 3-11
Scalable 3-4, G-15
Subset 3-2
Font cache 5-14
Font card 6-12
Installing 6-11
Font index number C-5
Font menu (Lineprinter) 4-40
Fonts
Downloadable 3-10
Intellifont SIMM 6-23, 6-26
Optional 3-10
PCL5, scalable 4-33
PCL5, temporary, retaining 4-32
PostScript 3-10
PostScript, allocating memory 4-48
Screen, Macintosh 6-36
See also specific font name
TrueType 3-10
Type 1 3-10
Type 3 3-10
Type 42 3-10
Formatting
Hard disk 6-48
Frame Buffer 5-12
Memory, allocating 4-51
French/German symbol set (HP-GL) 3-10

G

Gamma correction 4-56, 5-3, 5-5
Gray levels 5-4, 5-5
Halftone 5-4
Menu 4-56
Screen frequency 5-4
Garamond (Stempel) 6-27
Gray levels 5-4, 5-5
Gray-scale 5-6

H

Halftone quality
- Device resolution 5-4
- Laser beam 5-4
- Scan quality 5-4
- Screen frequency 5-4

Halftones
- Cells 5-4
- Gamma correction 5-4

Hard disk 4-60, 5-18, B-6
- Device numbers 6-47
- Disk Operations menu 6-48
- Enable Disk Swap menu 4-53
- Error messages 6-48
- External B-6
- External, identifying 6-47
- Font, installing to 4-61
- Font, removing from 4-61
- Formatting 4-61, 6-48
- IDE board B-6
- Internal B-6
- SCSI B-6
- Swap file 4-53

Hard disk, internal 6-43
Hardware flow control 4-22
Hardware requirements 6-56
Hdwe Flow Ctl menu (serial) 4-22
Header Input bin menu 4-44
Header Pages 4-44
Header pages
- DOC C-2
- Header Page menu 4-44
- Inputbin 4-44

Heap 4-48, 5-15
Helvetica 3-8, 3-13
Helvetica Condensed 3-8, 3-11
Helvetica Narrow 3-8, 3-11
Horiz. Offset menu 4-54
Host Input 4-47, 5-16
HP EOD 4-19, 5-20
HP PCL emulation
- HP PCL fonts 3-9

HP PCL fonts 3-9
HP-GL
- Color encoding 5-29
- DOC C-2
- Encoding, color 5-29
- Enhanced Mode 4-37
- Expand Mode menu 4-37
- Origin menu 4-36
- Paper Type menu 4-36, 4-38
- Pen 1 - Pen 8 4-38
- Plotter menu 4-36
- Reverse Image menu 4-37
- Scaling Percent menu 4-36
- Setting parameters 4-36

HP-GL symbol sets 3-9
- 9825 Character Set symbol set (HP-GL) 3-10
- ANSI ASCII 3-10
- French/German 3-10
- ISO French 3-10
- ISO German 3-10
- ISO IRV (International Reference Version) 3-10
- ISO Italian 3-10
- ISO Norway, Version 1 3-10
- ISO Norway, Version 2 3-10
- ISO Portuguese 3-10
- ISO Spanish 3-10
- ISO Swedish 3-10
- ISO Swedish For Names 3-10
- ISO United Kingdom 3-10
- JIS ASCII 3-10
- Katakana 3-10
- Roman Extensions 3-10
- Scandinavian 3-10
- Spanish/Latin 3-10
- Special Symbols 3-10

HP-GL/2
- See *PCL5* 4-34

I

IBM PC or Compatible
AT cable pinouts B-10
XT cable pinouts B-10
IDE board B-6
Ignore Par. Err. menu (serial) 4-20
Image alignment 2-3, 4-54
Menu 4-54
Imageable area 2-2
Image alignment 2-3
Input Bin Name 4-55
Input bins
Chaining 4-14
Header pages 4-44
Selection 4-13
Trailer pages 4-45
Install option
Installing 6-51
Installation menu 4-5, 4-62
Installing
Cards 6-13
Duplexer assembly 6-7
Emulation cards 6-11
Envelope feeder 6-3
Font cards 6-11
Internal hard disk 6-44
Intellifont SIMM 6-24
Kanji Disk 6-56
Network interface 6-29
RAM expansion 6-20
SIMMs 6-20
Intellifont SIMM 6-23
Accessing fonts 6-28
Albertus 6-27
Antique Olive 6-27
Clarendon Condensed 6-27
Coronet 6-28
Courier 6-27
Font list 6-26
Garamond (Stempel) 6-27
Installation 6-24
Letter Gothic 6-27
Line Printer 6-27
Marigold 6-28
Omega 6-27
Times Roman 6-27
Univers 6-27
Univers Condensed 6-28
Verifying installation 6-26
Interface
LocalTalk parameters, setting 6-40
Parallel parameters, setting 4-23
Priority 6-43
Serial parameters, setting 4-17
Internal hard disk B-6
Installing 6-44
International Reference Version
See *ISO IRV*
Internet A-3
Invalid password 4-63
ISO French symbol set (HP-GL) 3-10
ISO German symbol set (HP-GL) 3-10
ISO IRV (International Reference Version) symbol set (HP-GL) 3-10
ISO Italian symbol set (HP-GL) 3-10
ISO Norway, Version 1 symbol set (HP-GL) 3-10
ISO Norway, Version 2 symbol set (HP-GL) 3-10
ISO Portuguese symbol set (HP-GL) 3-10
ISO
See *HP-GL symbol sets*
ISO Spanish symbol set (HP-GL) 3-10
ISO Swedish For Names symbol set (HP-GL) 3-10
ISO Swedish symbol set (HP-GL) 3-10
ISO United Kingdom symbol set (HP-GL) 3-10
Italic and Oblique forms 3-5
ITC Avant Garde Gothic 3-8, 3-11
ITC Bookman 3-7, 3-8, 3-12
ITC Zapf Chancery 3-8
ITC Zapf Chancery Medium Italic 3-12

ITC Zapf Dingbats 3-8, 3-12
ITC Zapf Dingbats 6-28

J

Jam Recovery
Media Jam recovery 4-57
JIS ASCII symbol set (HP-GL) 3-10
Job Timeout menu 4-17

K

K Mem Disk Cache menu 4-50
K Mem Display 5-13
Menu 4-50
K Mem Emul Tmp 5-16
Menu 4-49
K Mem Emulation menu 4-49
K Mem for Spool 5-16
Menu 4-47
K Mem PS Fonts 5-14
Menu 4-48
K Mem PS Heap 5-15
Menu 4-48
Kanji
Fonts 6-55
Hardware requirements 6-56
Installing 5-56
Related files 6-56
Katakana symbol set (HP-GL) 3-10
Key
Cancel G-2
Keypad language menu 4-11, 4-60

L

Labels
Printing 2-4
See also *Media*
Stock 2-4
Storage 2-5
Type 2-4
Vendor B-7
Weight 2-4
Landscape orientation 3-5
Language
Message window 4-11, 4-60
Printer 5-2
Laser Prep 6-37
Laser safety D-2
LaserJet 4Si 6-23
LaserWriter 6-37
Letter Gothic 6-27
Letterhead 4-58
Level 1 PostScript 4-29
Level 2 PostScript 4-29
LF is CRLF menu (Lineprinter) 4-41
Line Numbering menu (Lineprinter) 4-40
Line Termination menu (PCL5) 4-31
Lineprinter 6-27
Autowrap menu 4-42
Character Map menu 4-40
CR is CRLF menu 4-41
DOC C-3
FF is CRFF menu 4-41
Font menu 4-40
LF is CRLF menu 4-41
Line Numbering menu 4-40
Lines per Page menu 4-42
Margins menu 4-42
Orientation menu 4-13, 4-42
Parameters, setting 4-39
Point Sz 100ths menu 4-40
Tab Stops menu 4-41
Lines per inch 5-4
Lines/ Inch x100 menu (PCL5) 4-31
Lines Per Page menu(Lineprinter) 4-42

LocalTalk
Cabling 6-35
Connection menu 6-41
Menu 6-40
Def Job Prio menu 6-43
Min K Spool menu 6-42
Mode menu 6-41
PS Protocol menu 6-42
Parameters, setting 6-40
Pinouts, cable B-12
See also *AppleTalk*

M

Macintosh
Applications 6-39
Cabling 6-35
Change printer name message 6-37
Drivers, print 6-36
Laser Prep 6-37
LaserWriter 6-37
Macintosh-to-serial cable pinouts B-12
PrintMonitor 6-37
PS Executive Series Utilities 6-36
Screen fonts 6-36
Software 6-39
Software, printing 6-36
System 6 6-38
System 7 6-38
System software, updating 6-62
SystemLoader 6-63
Testing communication 6-40
Updating print system software 6-63
Macros
PCL5, temporary, retaining 4-32
Manual feed
Size 4-14
Manual Feed Timeout 4-58
Manual notice D-2
Margins
Imageable area 2-2
Margins menu (Lineprinter) 4-42
Margins, page 2-3
Marigold 6-28
MB printer mem 5-18
Menu 4-52
Media
Imageable area 2-2, 2-3
Margins 2-3
Storage 2-5
Types 2-3
Weights 2-3
Memory 5-7, 5-8
Buffer, frame 4-51
Client 5-7, 5-8, 5-12, 5-13, G-9
Definitions 5-8
Disk cache 4-50, 5-16
Disk swap 4-53
Display 4-50
Emulation 4-49
Emulation, temporary, allocating memory 4-49, 5-16
Enable Disk Swap menu 4-53
Font cache 5-14
Fonts, PostScript 4-48
Frame Buffer 4-51, 5-12
Frame Buffer menu 4-51
Heap, PostScript 4-48, 5-15
Host Input 4-47, 5-16
K Mem Disk Cache menu 4-50
K Mem Display menu 4-50, 5-13
K Mem Emul Tmp menu 4-49
K Mem Emulation 4-49
K Mem PS Fonts 5-14
K Mem for PS Fonts menu 4-48
K Mem PS Heap 5-15
K Mem for PS Heap menu 4-48
K Mem for Spool menu 4-47, 5-16
MB printer mem 5-18
MB Printer Mem menu 4-52
NV RAM 5-10
Physical 5-10
PostScript fonts 4-48
PostScript font cache 5-14
PostScript heap 4-48, 5-15

PostScript VM 5-15
Printer 4-52
RAM 5-9
RAM disk 5-9
ROM 5-9
SCSI 5-9
Spooling 4-47
Spool buffers 5-16
Storage 5-8
System Use 4-52,5-18
Virtual 5-10, 5-15, 5-18
Volatile 5-9
Memory management 5-7
Memory submenu 4-47
Memory upgrade 6-20
Menu
Administration 4-15
Configuration diagrams E-2,3,4
Installation 4-62
Operator Control 4-12
See menu name
Message window
Language, changing 4-11, 4-60
Min K Spool menu
LocalTalk 6-42
Parallel 4-24
Serial 4-18
Mode menu
LocalTalk 6-41
Parallel Mode menu 4-23
Serial 4-18
Modes, communication 5-3
Monochrome HP-GL/2 menu (PCL5) 4-34
Monospacing 3-3

N

Network interface 6-29
Installing 6-29
Network job separator 5-24
New Century Schoolbook 3-8, 3-12
New Flash Image menu 6-62
Nibble mode, parallel 5-26
NV RAM 5-10, G-10

O

Object C-6
Oblique forms 3-5
Offset stacking 4-58
Offset, image, configuring 4-54
Omega 6-27
Operator Control menu 4-4, 4-12
Optional accessories
Cards 6-11, 6-13
Duplexer assembly 6-7
Emulation cards 6-11
Envelope feeder 6-3
External hard disk 6-46
Font cards 6-11
Hard disk, external B-6
Hard disk, internal B-6
IDE board B-6
Intellifont SIMM 6-23
Network interface 6-29
Paper cassettes 6-3
Printer emulations 6-53
SCSI-IDE board 6-48
Security card 6-13
Optional features 4-63
Optional interface
Using 6-34
Orientation
Landscape 3-5
Portrait 3-5
Orientation menu (Lineprinter) 4-13, 4-42
Origin menu (HP-GL) 4-36
Output bin name 4-56
Output bins 4-14
Ozone density B-4

P

Page design 3-13
- Bibliography 3-13
- Design 3-13
- Readability 3-13

Page margins 2-3
Page Recovery menu 4-57
Palatino 3-12
Paper
- Jams 2-2
- See also *Media*
- Sizes 2-2
- Storage 2-5
- Transparencies 2-2
- Types 2-4
- Vendor B-7
- Weights 2-4

Paper cassettes 6-3
- See also *Media*

Paper Type menu (HP-GL) 4-36, 4-38
Parallel
- Byte mode 5-25
- Compatibility mode 5-26
- Data Bits menu 4-25
- ECP mode 5-26
- Emulation menu 4-24
- End Job Mode menu 4-25
- Enhanced Compatibility Port mode 5-26
- Enhanced Parallel Port mode 5-26
- EPP mode 5-26
- Menu 4-23
- Min K Spool menu 4-24
- Modes 5-25
- Nibble mode 5-26
- Parameters, setting 4-23
- Protocol 5-19
- PS Protocol menu 4-26, 4-27
- Spool Timeout menu 4-25

Parallel interface
- Pinouts B-7

Parity
- Errors, ignore 4-20
- Ignore errors 4-20
- Serial 4-20

Password
- Administration 4-62
- Invalid 4-63
- Using 4-63

PC
- System software, updating 6-62
- Updating print system software 6-65

PC/AT
- See *IBM PC or Compatible*

PC/XT
- See *IBM PC or Compatible*

PCL 4
- DOC C-4

PCL 5
- DOC C-3, C-4, C-7
- Font C-4
- Font index number C-5
- Intellifont font list 6-26
- Intellifont SIMM 6-23
- Object C-6
- Resource C-6
- Terminology C-4

PCL5
- Default Font Index menu 4-34
- Default Font menu 4-30
- Downld Location menu 4-35
- Fonts, scalable 4-33
- Fonts, temporary, retaining 4-32
- Line Termination menu 4-31
- Lines per Inch menu 4-31
- Macros, temporary, retaining 4-32
- Monochrome HP-GL/2 menu 4-34
- Parameters, settingHP PCL5
- Point Size x 100 menu 4-32
- Retain Temporary menu 4-32
- Scalable Fonts menu 4-33
- Symbol Set menu 4-30

PDF 6-39

PDX 6-39
Pen 1 - Pen 8 menu (HP-GL) 4-38
Physical characteristics
  Dimensions B-4
Physical memory 5-10
Pi typeface 3-7
Pinouts, cable
  Ethernet
    10BaseT B-11
    10Base2 B-11
  IBM PC/AT B-10
  IBM PC/XT B-10
  LocalTalk B-12
  Macintosh-to-serial B-12
  Parallel B-7
  Serial B-9
Pitch 3-4
Plotter menu (HP-GL) 4-36
Point size 3-4
Point Size x 100 menu (PCL5) 4-32
Point Sz 100ths menu (Lineprinter) 4-40
Portrait orientation 3-5
PostScript
  Bibliography 3-13
  DOC C-4
  Emulation Level menu 4-29
  Error Handler 4-47
  Fonts 3-10
  Fonts, allocating memory 4-48
  Font cache 5-14
  Heap 4-48, 5-15
  Level 1 4-29
  Level 2 4-29
  Parameters, setting 4-29
  Timeout 4-16
PostScript operators
  scale 2-3
  setgray 5-6
  translate 2-3
PostScript VM 5-15
Power
  Conservation 4-57
PPD file 6-39
Print Media
  Page sizes and imageable area 2-2
Print media
  Page sizes B-5
Print media jams
  Preventing 2-5
Print quality
  Gamma correction 5-3
  Halftones 5-4
Print resolution 5-5
  Gray levels 5-5
Printer
  Electrical requirements B-4
  Memory 4-52
  Physical characteristics B-4
  Reconfigure the memory 6-59
  Start-up options 4-46
Printer commands C-4
Printer drivers
  Macintosh 6-36
  See also *Drivers*
Printer emulation 6-53
  Removing 6-54
Printer language 5-2
Printing environments 5-10
PrintMonitor 6-37
Product registration 6-56
Proportional spacing 3-3
PS Executive Series Utilities 6-36
  Configuration, printer 4-3
  Image alignment 2-3
PS heap 5-15
PS Protocol 4-22, 5-26
  Advantages 5-29
  Implementation 5-29
  Quoted character 5-27
PS Protocol menu
  LocalTalk 6-42
  Parallel 4-26, 4-27

Serial 4-22
PS Wait Timeout menu 4-16

Q

Q-FAX A-2
QMS EOD 4-19, 5-20
QuarkXPress 6-39
Quick configuration
See *Frame buffer*
Quoted character 5-27

R

RAM 5-9
Installing expansion 6-20
NV RAM 5-10, G-10
Removing memory board 6-23
RAM disk 5-9
Random Access Memory 5-9
See also *RAM*
Rcv Sw Flow Ctl menu (serial) 4-21
Read-Only Memory 5-9
See also *ROM*
Reboot Now? message 4-10
Reconfiguring the memory 6-59
Reconfiguring the printer
Example 6-61
Procedure 6-59
Remote Console
Configuration, printer 4-4
Removal
Font, optional 6-51
SIMMs 6-23
Resident fonts
HP PCL fonts 3-9
Resident fonts, PostScript 3-7
Resident typefaces, PostScript 3-7
Resolution
Setting 4-56
Retain Temporary menu (PCL5) 4-32
Reverse Image menu (HP-GL) 4-37
ROM 5-9
Flash 5-10
Roman Extensions symbol set (HP-GL) 3-10

S

Sans serif typefaces 3-6
Scalable font 3-4, G-15
Scalable Fonts menu (PCL5) 4-33
Scale (PostScript operator) 2-3
Scaling Percent menu (HP-GL) 4-36
Scandinavian symbol set (HP-GL) 3-10
Schoolbook
New Century Schoolbook 3-6
Screen fonts
Macintosh 6-36
Screen frequency 5-4, 5-5
Script typefaces 3-7
SCSI 5-9, 6-47
SCSI disks B-6
Security card 6-13
Serial
Baud Rate menu 4-20
Cable pinouts B-9
Data Bits menu 4-21
Emulation menu 4-18
End Job Mode menu
HP EOD 4-19
Hardware control 4-22
Hdwe Flow Ctl menu 4-22
Ignore Par. Err. menu 4-20
Menu 4-17
Min K Spool menu 4-18
Mode menu 4-18
Parameters, setting 4-17
Parity menu 4-20
Protocol 5-19
PS Protocol menu 4-22
Rcv sw flow Ctl menu 4-21
Software control, receive 4-21
Spool Timeout menu 4-19
Stop Bits menu 4-21

Xmit software flow control menu 4-21
Serif typefaces 3-6
Service
QMS, World-wide A-6
United States A-4
setgray 5-6
Signal direction B-8
SIMM 5-9
Intellifont 6-23
Simultaneous interfacing option
Defined 5-3
Small Computer System Interface
See *SCSI*
Software
Macintosh, printing 6-36
Software flow control 4-21
Receive 4-21
Software requirements for Kanji 6-56
Macintosh system software 6-56
PC system software 6-56
Spanish/Latin symbol set (HP-GL) 3-10
Special Pages
Calibration 4-44
Header pages 4-44
Menu 4-43
Status Page Type menu 4-43
Trailer pages 4-45
Special Symbols symbol set (HP-GL) 3-10
Specifications
Controller B-3
Duty cycle B-2
Emulations B-3
Memory B-3
Ozone density B-4
Print engine B-2
Print Media B-5
Print method B-2
Print speed B-2
Resolution B-2
Toner B-2
Toner cartridge B-2
Warm-up time B-2
Spool 5-10
Spool buffers 5-16
Spool Timeout menu (Parallel) 4-25
Spool Timeout menu (serial) 4-19
Spooling
Memory 4-18
Memory, allocating 4-47
Min K Spool menu 4-24, 6-42
Timeout 4-19
Stacking, offset 4-58
Standard status page 4-43
Start-up options 4-46
Startup Options menu
Do Error Handler menu 4-47
Do Start Page menu 4-46
Do Sys Start menu 4-46
Start-up Page
Menu 4-46
Status message
Reboot Now? 4-10
Status page
Advanced 4-43
Printing 4-43
Standard 4-43
Type 4-43
Stempel
See *Garamond (Stempel)*
Stop Bits menu (serial) 4-21
Storage
Hard disks 6-48
Media 2-5
SCSI 5-9
Storage, memory 5-8
Stroke weight 3-4
Support
CompuServe A-3
Customer A-2
Internet A-3
QMS bulletin board A-3
QMS, World-wide A-6

Technical A-4
United States A-4
Swap file 4-53
Symbol 3-8, 3-12
Symbol set menu (PCL5) 4-30
Symbol sets
HP-GL 3-9
See *HP-GL symbol sets*
Symbol typeface 3-7
SYSSTART file 4-46
System memory 5-18
System software
SystemLoader 6-63
Updating 6-62
Updating via Macintosh 6-63
Updating via PC 6-65
System Use 4-52, 5-18
SystemLoader 6-63

T

Tab Stops menu (Lineprinter) 4-41
Temperature requirements B-4
Temporary emulation 5-16
Timeout, PostScript 4-16
Timeouts 4-16
ESP 4-17
Job 4-17
Spooling 4-19
Timeouts menu
Emul Timeout 4-17
ESP Timeouts menu 4-17
Job Timeout menu 4-17
PS Wait Timeout 4-16
Times 3-8, 3-11
Times Roman 6-27
Toner
Toner out action 4-57
Toner cartridge
Model EP-B B-2
Trailer Input bin menu 4-45
Trailer pages 4-45
DOC C-2
Menu 4-45
Source, specifying 4-45
translate (PostScript operator) 2-3
Transparencies
See also *Media*
Storage 2-5
Type 2-5
Vendor B-7
Weight 2-5
Tray assembly 6-15
Reinstalling 6-19
Removing 6-15
Trays 6-3
See also *Cassettes*
TrueType fonts 3-10
Tumble Duplex 4-15
Type 1 fonts 3-10
Type 3 fonts 3-10
Type 42 fonts 3-10
Typeface 3-2
Card 6-12
Courier 3-7, 3-9, 3-11, 6-27
Defined 3-2
Family 3-2
Helvetica 3-8, 3-13
Helvetica Condensed 3-8, 3-11
Helvetica Narrow 3-8
Helvetica Narrow Condensed 3-11
Italic 3-5
ITC Avant Garde Gothic 3-8, 3-11
ITC Bookman 3-7, 3-8, 3-12
ITC Zapf Chancery 3-8
ITC Zapf Chancery Medium Italic 3-12
ITC Zapf Dingbats 3-8, 3-12
LinePrinter 3-9
Monospacing 3-3
New Century Schoolbook 3-8, 3-12
Oblique 3-5
Palatino 3-12
Pi 3-7

Pitch 3-4
Point size 3-4
Proportional spacing 3-3
Resident, PostScript 3-7
Samples 3-11
Sans serif 3-6
Script 3-7
Serif 3-6
Stroke weight 3-4
Symbol 3-7, 3-8, 3-12
Times 3-8, 3-9, 3-11
Univers 3-9
Univers Condensed 3-9
Using 3-13
Zapf Dingbats 3-9
Typographic conventions 1-4

U

Univers 6-27
Univers Condensed 6-28
Updating system software 6-62
Using the EOD commands 5-20

V

Vendor
Labels B-7
Paper B-7
Transparencies B-7
transparencies B-7
Vertical Offset menu 4-55
Virtual disk 5-9
Virtual memory 5-10, 5-15, 5-18
Volatile memory 5-9

W

Warning buzzer 4-57
Warranty B-13

X

Xmit Sw Flow Ctl menu (serial)
Transmit 4-21

Z

Zapf Chancery
ITC Zapf Chancery 3-6
Zapf Dingbats
ITC Zapf Dingbats 3-6